The Oil and Gas Journal

PUBLISHED WEEKLY BY THE
PETROLEUM PUBLISHING COMPANY,
211 S. Cheyenne
TULSA, OKLAHOMA

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Published weekly by The Petroleum Publishing Co., 211 South Cheyenne, Tulsa, Okla. Subscription price, United States and foreign, 1 year, $6.00; 2 years, $10.00; 3 years, $12.00; 5 years, $15.00. Single copies, 20 cents each. Back copies, when over a year old, 50 cents. Changes of address reaching the Tulsa office of the Journal by Saturday take effect with the following issue. Entered as second-class mail matter at Tulsa, Okla., under the Act of March 3, 1879.

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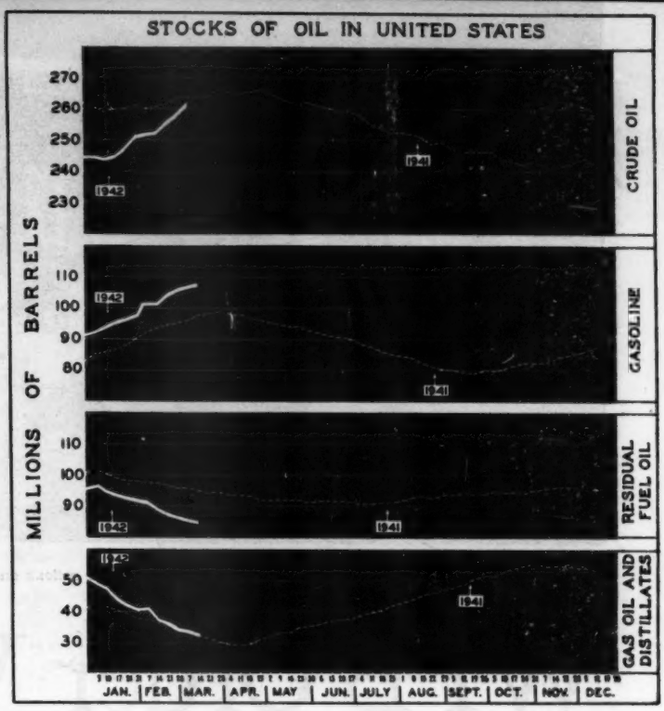
Trends

Operators Adjusting Production in Pattern With Current Demand



REPORTS this week indicate that producers and refiners are making some progress in adjusting their operations to conditions brought about by a tanker shortage including the new development of the week—rationing. Crude-oil production, reflecting principally the downward adjustments in Texas, last week dropped to the lowest level since January of last year. While refinery runs to stills vary from week to week the general trend is to keep operations more in line with the changes in current demands. The need for these revisions is indicated in the charts and tables appearing on this page. Since late November 20 million barrels of crude oil have been added to storage brought about by an average excess of supply over demand of approximately 165,000 bbl. daily. Probably some increase in crude-oil stocks to support civilian and military requirements was desirable but inventories in recent weeks have been excessive at several points and reductions in stocks would aid in strengthening markets.

CRUDE PRODUCTION *3,526,580 bbl. daily average—down 433,620 bbl. One year ago 3,676,705 bbl.*

CRUDE STOCKS *260,064,000 bbl. as of March 7—up 691,000 bbl. One year ago 264,001,000 bbl.*

GASOLINE STOCKS *107,229,000 bbl. as of March 14—up 561,000 bbl. One year ago 98,014,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *85,489,000 bbl. as of March 14—down 2,042,000 bbl. One year ago 95,164,000 bbl.*

GAS OIL AND DISTILLATES *32,831,000 bbl. as of March 14—down 1,555,000 bbl. One year ago 32,520,000 bbl.*

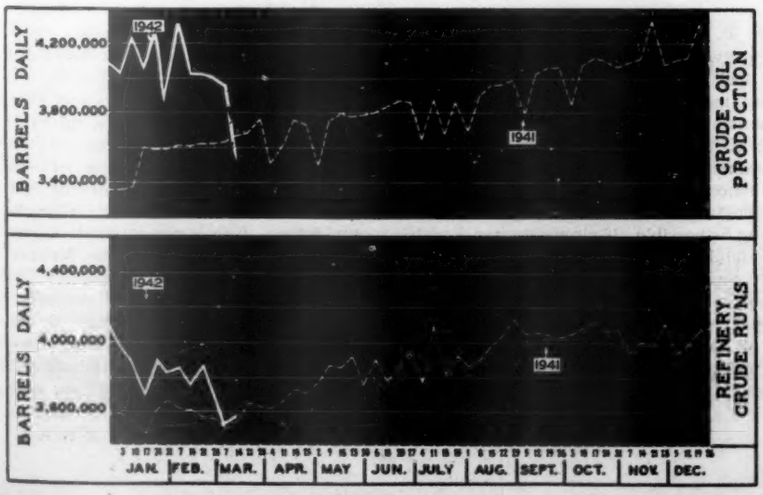
REFINERY RUNS *3,588,000 bbl. daily week ended March 14—up 58,000 bbl. One year ago 3,546,000 bbl.*

Recent reports on production and stocks and the 20 per cent gasoline rationing effective Thursday in two large consuming areas, reveal what needs to be done in refinery operations. Present gasoline stocks are 10 million barrels greater than they were a year ago while fuel-oil stocks have decreased about 8 million barrels over the same period. The present rationing program indicates, that to take care of conditions brought about by the tanker shortage, the Government will place emphasis on meeting all fuel-oil requirements and for a time force reductions in gasoline consumption. With recent price trends proof that gasoline stocks are excessive at many points and shortages in furnace oils and other fuel oils in prospect later in the year, the probable pattern of refinery operations is obvious. It assures that many refinery operators will have to increase their yields of distillates and residual fuels at the sacrifice of gasoline recovery. This reverses the trend for many years in plant processing. Many refiners have already made part of the adjustment in plant output. A general acceptance of this operating practice is necessary if further price declines in gasoline are to be avoided.

There is considerable complaint among producers as to a lack of equity in revising allowables and in pipe-line takings in Texas which so far has absorbed most of the national decline in crude-oil production. Conditions in West Texas and New Mexico are cited as examples. There, the purchases of crude-oil buyers vary from 23 per cent to 100 per cent of state allowables. It is also pointed out that in other parts of the state the recent addition of 4 shutdown days has reduced the supply under the demand.

DAILY AVERAGE PRODUCTION FOR WEEK

	Mar. 14, 1942	March OPC recommended production	Mar. 7, 1942
Arkansas	70,500	71,500	69,850
California	643,150	627,000	622,250
Eastern fields	113,200	108,500	114,500
Illinois	321,140	362,500	334,330
Kansas	234,400	245,800	233,100
Louisiana	333,635	314,700	350,015
North Louisiana	*80,935*	.....	*81,565*
Louisiana Gulf Coast	*252,700*	.....	*268,450*
Michigan	50,900	49,500	48,600
Mississippi	90,065	53,100	84,235
Nebraska	4,050	5,100	3,950
New Mexico	114,880	100,200	120,340
Oklahoma	396,250	405,300	392,000
Rocky Mountain states	113,910	107,900	113,580
Texas	1,040,500	1,138,600	1,473,450
East Texas	*219,750*	.....	*368,200*
West Texas	*146,450*	.....	*263,300*
North Central Texas	*139,150*	.....	*149,250*
East Central Texas	*78,500*	.....	*90,900*
Texas Panhandle	*75,900*	.....	*89,750*
Texas Gulf Coast	*306,800*	.....	*418,750*
Southwest Texas	*73,950*	.....	*93,300*
Total United States	3,526,580	3,589,700	3,960,200
Total production, Jan. 1-Mar. 14, 1942		295,369,300 bbl.	
Same period last year		260,841,050 bbl.	



Twelve-hour operation, 72 hours a week on 20 per cent reduced rations on the East Coast and Pacific Northwest, effective March 19, will dim station-lighting systems

WPB Order Will Cut Gasoline Supply 50,000,000 Barrels

A REDUCTION of approximately 50 million barrels in the annual motor-fuel consumption in the United States is provided in War Production Board's Limitation Order L-70, effective March 19. Application of the restrictive order so far is localized in 17 eastern seaboard states, the District of Columbia, and in Washington and Oregon in the Pacific Northwest.

States embraced in the limitation order, which restricts deliveries to 80 per cent of recent basing periods, consumed about 38.25 per cent of the domestic motor-fuel demand in 1941, or a total of approximately 252,810,000 bbl. The 17 eastern states and the District of Columbia consumed about 36 per cent of the domestic total of 660,000,000 bbl. in 1941 and the two northwestern states accounted for 2.25 per cent.

JOHN A. BROWN

The War Production Board acted on recommendation of the Office of Petroleum Coordinator. Representations to WPB were made on the basis of a special study of the East Coast supply situation conducted by an emergency subcommittee headed by John A. Brown, New York, president of Socony-Vacuum Oil Co., Inc., and general chairman, District 1.

Confinement of the consumption restrictions to the areas where lack of transportation has resulted in acute shortages defers, at least temporarily, nation-wide rationing. Indications were, however, that the OPC acted through WPB because of the more direct and immediate results than obtainable through consumer rationing which falls under jurisdiction of Leon Henderson's Office of Price Administration and Civilian Supply.

Hints of divergent views between OPC and OPA on petroleum rationing have sifted out of Washington during recent weeks. Mr. Henderson favors nation-wide rationing rather than confining restrictions to local areas. Coordinator Ickes and numerous elements in the petroleum industry, including the Petroleum Industry War Council, are on record opposing restrictions on consumption where supplies are abundant.

Evidence that OPC's distaste for curtailment of motor-fuel consumption continues is given in the emphasis placed on the insufficiency of transportation as the basic reason why limitation is necessary. Coordinator Ickes went to detailed lengths in blaming transportation for the order and pointed out that the deficiency was foreseen last fall, obviously referring to the two abortive efforts to obtain approval for the national-defense pipe line.

In obtaining an order restricting gasoline deliveries to approximately 80 per cent of normal, the OPC slightly modified recommendations from Mr. Brown's committee which had suggested a cut of 25 per cent on the East Coast. The committee recommended rationing of consumers through a card system, although the limitation order issued by WPB follows the group's appeal for an emergency restriction.

Diversion of tank cars from other districts to the extent that the railroads can handle traffic into District 1 "even if this means rationing for Districts 2 and 3" was recommended by Mr. Brown's committee.

Nation-wide rationing is a question that must be answered by developments. The determining factors will be adequacy of the comparatively mild localized limitation order in halting decline of East Coast stocks, effectiveness of emergency shifts in transportation facilities, and intensity of submarine warfare along the Atlantic Coast. If the diversion of tank cars from inland service to deliveries on the East Coast precipitates a transportation snarl in the Middle West—and this contingency was definitely indicated this week—then national rationing would seem inevitable.

•

Industry Approval Preceded Request for Restriction

WASHINGTON, D. C., Mar. 16.—Restrictions on gasoline deliveries imposed by the War Production Board had approval of leaders in the industry, including members of the Petroleum Industry War Council. The acute transportation shortage resulting in the restrictive measure was explained by Coordinator Ickes. "The Office of Petroleum Coordinator," Mr. Ickes said, "has been desirous of avoiding curtailment of gasoline consumption as long as possible. If circumstances permitted, we should like—just as the industry would—to make it possible for everyone to have full tanks at all times.

"Normally, 95 per cent of the approximately 1,700,000 bbl. of oil used daily in the East is brought here by tanker. Many of those tankers have either been sunk or have been diverted for military service, or service in other areas. Anyone, I am sure, can see that this has dislocated our transportation operations.

"I am sure, also, that everyone knows that very great efforts have been made to build up overland transportation to take the place of the tankers so far as possible. Whether it will be possible to make up 100 per cent for the lost ships—and for others that may be sunk or diverted in the future—I shall not attempt to predict. If it can be done, it will be done. Neither the industry nor the Office of Petroleum Coordinator will spare any effort in that respect.

"Meanwhile, we have no choice but to be realistic: There is not enough substitute transportation as of today to meet all civilian demands, and at the same time to meet the military and

industrial requirements which have to come first. By heroic efforts, the railroads and the oil companies have built up tank-car movement to the amazing total of 435,000 bbl. daily, but, even though we all hope that this tremendous amount may continue to grow, everybody realizes that there is a physical limit to what the railroads can haul. And, 435,000 bbl. daily is only about one-fourth of what our daily demand has been.

"The limitation which is being imposed is a reasonable one. It should cause no one any hardship or even serious inconvenience. Although there is no way that I know of to limit the use of a commodity in a way that will be completely equitable to everybody, this order has been prepared with the aim of providing minimum of difficulty and, at the same time, furnishing the means of dealing with a serious situation."

Issuance of the WPB limitation order on gasoline is the consequence of a steady decline of stocks in the East and the Pacific Northwest. This decline, foreseen earlier, began in December and has continued until, on the basis of latest figures, stocks of all reported petroleum and products in the eastern states are more than 12,000,000 bbl. below those of the same day a year ago. Last summer the growing deficiency was relieved by restrictions which enabled the building up of a cushion of petroleum products. To some extent the East Coast has been riding on that cushion since Pearl Harbor.

This decline is not due to any deficiency in oil supplies. In fact, storage on the Gulf Coast and in the Southwest is brimming.

Numerous and continuing steps to correct the situation have been taken, and are still being taken, by the oil industry and the OPC. The extraordinary movement by tank car is perhaps the most spectacular, especially in view of the fact that there was practically no such movement up to 9 months ago. It was estimated at the recent meeting of the Petroleum Industry War Council that tank-car shipments are adding $115,000,000 a year to the oil companies' shipping costs. Now, freight rates have been advanced 6 per cent, adding another $7,000,000 to the rail-transportation bill.

By terms of the WPB order, gasoline may not be shipped out of the curtailment areas except in certain cases along the borders, in which cases compliance with the letter of the order would be impracticable or would work hardships.

Provision is made for resupplying dealers to the extent to which they are called upon for direct sales to the armed forces. This will protect stations that may be called upon to serve Army convoys, for example, and which would be left dry unless more supplies were available.

Rationing Chief Appointed

WASHINGTON, D. C., Mar. 17.— Appointment of Joel Dean as chief of gasoline rationing in the newly-created Rationing Division of the Office of Price Administration was announced today by Acting Price Administrator John E. Hamm.

Mr. Dean, an industrial engineer and assistant professor at the school of business of the University of Chicago, has been serving since July as price executive of the machinery section of OPA.

East Coast Stock Declines Forced Cut in Consumption

By J. P. O'DONNELL

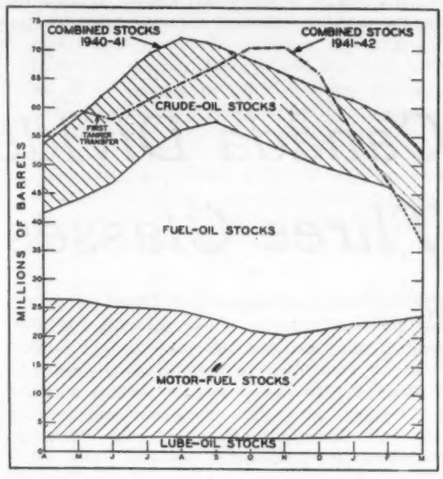
NEW YORK, Mar. 16.—The continued downward trend of petroleum stocks on the East Coast justifies the limitation imposed this week on deliveries of motor fuel. Prerestriction indications were that East Coast stocks of crude, gasoline, fuel and lubricating oils would be less than 40,000,000 bbl., possibly as low as 36,500,000 bbl. at the end of March, the normal low point of the year. The lower figure would have been 15,857,000 bbl. below stocks on the corresponding date of 1941, a deficiency of 30 per cent.

Serious as the East Coast stock position appeared, it did not constitute the sole reason for restricting gallonage. East Coast demand reaches its peak in the winter when increased fuel-oil demand far offsets reduced gasoline consumption. For this reason it is essential that large stocks of fuel oil be accumulated during the spring and summer. At present it appears that this will not be possible unless summer consumption is reduced and, if it is not possible, drastic restrictive measures will be needed in the winter of 1942-43.

Because the fuel-oil season normally ends about March 31, the accepted statistical year begins April 1. This is illustrated in the accompanying chart in which the "normal" 1940-41 season is compared with 1941-42. Fuel-oil stocks were increased about 20,000,000 bbl. through the spring and summer of 1940, reaching a peak of about 34,500,000 bbl. at the end of September. Crude-oil stocks varied slightly while gasoline inventories declined moderately. Even with this substantial addition to fuel-oil stocks, combined inventories fell from a peak of 72,187,000 bbl. on August 31, 1940, to a low of 52,357,000 bbl., March 31, 1941.

In contrast to the gradual rise and fall of stocks in the "normal" year, 1940-41, is the interrupted rise and accelerated fall of the season now in its final month. This line shows the effect of the initial tanker transfer early in the summer of 1941, how the industry successfully offset this loss by emergency transportation methods and how it managed to build up stocks on the East Coast to a late November high of 71,636,000 bbl. This was more than 5,500,000 bbl. above the level of November 30, 1940.

Outlook of war in the Pacific caused the transfer of tankers to the Pacific from the Atlantic



This rapid fall of the East Coast stock curve, projected at earlier rates through end of March, resulted in restricting gasoline consumption

coastwise run. German submarines have sunk more than a score of U. S. and Allied tankers in the Atlantic and Caribbean and temporarily disabled a number of others. The combined effect of developments caused a decline of 290,000 bbl. per day in East Coast stocks, more than three times the average 90,000 bbl. per day decline of the preceding "normal" year.

Demand for all products had been higher this year. Preliminary reports indicate that East Coast demand for all products was up 10 per cent in January and 5 per cent in February. It was obvious that if increased gasoline demand con-

HERE'S HOW STATION QUOTAS ARE DETERMINED

Here is how gallonage quota for any quota month is ascertained—the month of April, for instance—under the gasoline-limitation plan.

First.—Determine base gallonage. This is done by totaling the number of gallons of gasoline delivered in the 3 months of December 1941, and January and February 1942, and dividing by three. For example: If receiving 36,000 gal. in that period, then base gallonage is 12,000 gal.

Second.—Determine seasonal adjustment. Total the gallonage delivered in the 3 months of December 1940, and January and February 1941. Divide this by three, which gives the average delivered for each of those months. Then, subtract average figure from the number of gallons received in the 1941 month which corresponds to the 1942 quota month, in this case, April. (When determining the May quota this year, use May 1941, in calculating the seasonal adjustments. In June, compare with June 1941, and so on.) For example: If monthly average for the period December 1940-February 1941, was 10,000 gal., and 12,500 gal. were received in April 1941, the difference, or increase, of 2,500 gal., is the seasonal adjustment.*

Third.—Take base gallonage figure of 12,000 gal. and add seasonal adjustment of 2,500 gal. The total of 14,500 gal. is the normal gallonage. In other words, that amount of gasoline which normally would be delivered in April 1942, if there were no restrictions on deliveries.*

Fourth, and last.—Multiply normal gallonage of 14,500 gal. by the allowable percentage of 80 per cent and the resulting figure of 11,600 gal. is monthly quota for April 1942.*

***In case of a station whose April 1941 gallonage was less than the average delivered per month in the period December 1940-February 1941, normal gallonage would be determined by subtracting the difference from the December 1941-February 1942 figures, instead of adding. In other words: If a dealer received 9,000 gal. in April 1941, or 1,000 gal. less than his 10,000-gal. average for the preceding 3 months, he must subtract this figure (seasonal adjustment) from his December 1941-February 1942 average of 12,000 gal. This fixes his normal gallonage at 11,000 gal. Then, by multiplying 11,000 by the percentage curtailment of 80 per cent, he will find his monthly quota for April to be 8,800 gal.)**

tinued through the summer and transportation is not improved, there would be no possibility of making the essential additions to fuel-oil stocks. In fact some observers, in view of the decline of 600,000 bbl. (approximately equivalent to one day's demand) in gasoline stocks in the week ended March 7 were skeptical of the industry's ability to meet the comparatively low demand of summer.

There is a possibility that transportation will improve as new tankers are delivered. However this possibility is offset by others such as continued sinkings which would nullify to some extent the new construction, and a further widening of combat zones which will require the new tankers for delivering oil to more distant points.

It is apparent that rail shipments have not been able to meet the problem. In the week ended March 7 tank-car shipments averaged 435,086 bbl. per day. Despite this all-time record, stocks of all oils on the East Coast declined 2,671,000 bbl. Current East Coast demand is estimated at 1,720,000 bbl. per day so that even these record tank-car shipments represented only 25 per cent of the total.

It is estimated that delivery by tankers to the East Coast is now averaging less than 800,000 bbl. per day, about 50 per cent substandard.

Canada Divides Cars Into Three Classes in Rationing

ESSENTIAL features of the Canadian motor-fuel rationing plan which becomes operative April 1, were outlined last week by G. M. Cottrelle, oil controller, in detailed instructions to distributors. The complete plan divides automotive vehicles into eight categories and coupon books are issued on a basis of each classification's relation to essential services.

Motor vehicles are divided into three classes, determined by cylinder displacement, horsepower, weight and other factors that influence consumption. This division is made with the intention of equalizing the mileage that may be traveled on the reduced fuel rations. Cars in Category A, the lowest classification covering all vehicles not eligible for a higher rating, will receive from 60 to 70 units of 5 gal. (Imperial) annually, making a total for the year of 300 to 380 gal.

Here is a list of the various categories of cars and the amounts of motor fuel available to each class under the Canadian rationing plan:

Category A

Category A will include the majority of non-commercial motor vehicles, and all vehicles which are not eligible for any other category must be registered in Category A.

Maximum purchases permitted for vehicles in the various categories are as follows:

Class—	Units per annum
1	60
2	68
3	76
Motorcycles	24

Category B

Category B is reserved for the following: Rural school teachers, farmers who do not possess a truck, urban undertakers, urban veterinary surgeons, members of A.R.P. and auxiliary fire and police organizations, clergymen.

Class—	Units per annum
1	88
2	100
3	116

Category BX

Category BX is reserved for employes of industrial plants and of flying schools under the British Commonwealth Air Training Plan, if such plants or schools are not adequately served by alternative forms of transportation.

Class—	Units per annum
1	132
2	148
3	172

Category C

Category C is reserved for the following:

Employes of industrial plants and of flying schools under the British Commonwealth Air Training Plan if such plants or schools are not adequately served by alternative forms of transportation and are located more than 20 miles from their residence; government officials who drive their own cars on government business; urban commercial travellers; operating executives of companies engaged in the execution of war contracts who produce a written request from the Secretary of the Department of Munitions and Supply for inclusion in Category C; newspaper reporters; press photographers; railway employes who are required to use their cars on company business; physicians and surgeons; Christian Science practitioners; drugless healers; rural undertakers; rural veterinary surgeons; incapacitated individuals, if car required for normal conduct of business; consuls and vice-consuls of career; trade commissioners and assistant trade commissioners.

Class—	Units per annum
1	168
2	188
3	216

Category D

Category D is reserved for the following:

Government auditors and inspectors who drive their own cars on government business; officers, field secretaries and nurses of the Canadian Red Cross Society and organizations which are members of the Canadian Welfare Council or other similar bodies, including religious orders engaged in welfare work.

Class—	Units per annum
1	280
2	312
3	356

Category E

Category E is reserved for the following:

Rural commercial travelers; rural mail delivery contractors; official cars of the Inspection Board of the United Kingdom and Canada; members of accredited foreign naval, military and air force missions; official cars of the United Kingdom and other empire air liaison missions; members of the diplomatic corps eligible for inclusion in the diplomatic list published by the Department of External Affairs; members of high commissioners' offices and accredited representatives' offices eligible for inclusion in the "list of British Commonwealth Representatives in Canada" published by the Department of External Affairs; consuls general, of career; others accorded full diplomatic privileges by treaty or by the Department of External Affairs.

Class—	Units per annum
1	388
2	436
3	500

Category Commercial

Category Commercial is reserved for the following:

Trucks (including farm trucks); (farm and industrial machinery not required to be licensed or registered for highway use need not be registered with the Oil Controller for Canada); truck tractors; commercial motorcycles; ambulances; buses; taxi cabs, livery cars and drive-yourself cars regularly used and registered for such use; vehicles owned or operated by companies operating flying schools under the British Commonwealth Air Training Plan; official vehicles of Dominion; provincial, county and municipal governments.

Purchases of gasoline are permitted for vehicles in Categary Commercial as required, to the extent that units can be spared. Two ration books of 64 coupons each will be issued in respect of each motor vehicle registered in this category. When the first book has been exhausted, the cover must be returned to the nearest regional office of the Oil Controller for Canada for replacement. The extra coupon book makes pos-

NEXT WEEK

The ANNUAL

REFINERY

NUMBER

- Timely feature articles by engineers and outstanding technologists.
- Series of 18 flow charts presenting quick and convenient understanding of new technical processes employed to make high-octane gasoline.
- More than a score of money-saving practical suggestions.
- Annual survey of refineries in North America, showing location, daily crude capacity, type of operations and cracking capacity.

ALSO—

- A 65-page Buyers' Guide that will simplify the refinery engineers' problem of buying the millions of dollars worth of equipment they will be asked to select within the next year.

This Week...

Consumption of motor fuel ordered reduced 50 million barrels in 17 eastern seaboard states and 2 in the Pacific Northwest. Represents nearly 8 per cent of total gasoline consumed in this country last year. Considered emergency measure until card rationing system can be perfected.

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Tank-car shipments to East Coast rose to 435,000 bbl. daily during first week in March. Failed to arrest declining stocks there which fell 2,671,000 bbl. in the meantime.

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Repair and maintenance order P-98 amended and extended. Changes mostly in technical verbiage. Effort made to clarify ambiguous provisions. Natural-gasoline plants given same status as refineries.

●

Eastern oil men contend 20 per cent gasoline-consumption cut insufficient if adequate fuel-oil stocks are to be accumulated this summer. Possibly 35 per cent reduction needed, they say, if tanker losses continue at present rate. Card rationing held vital.

●

Eastern distributors buying fuel oils wherever available. Purchasers seek contracts permitting them to use tank cars for two or more additional trips east between points they may designate.

OPC considering recommendation calling for cut of 10 per cent in refinery production of motor fuel. Automatic increase in fuel production envisaged. Gulf Coast refiners may be asked to make horizontal cut of 15 per cent in crude runs to stills.

●

Stages in refinery processing to recover 100-octane gasoline, butadiene, styrene and toluene in standardized combination unit disclosed. Rubber companies seeking post-war contracts for butadiene below present cost of production, blamed for slowing program.

●

Localized restrictions on gasoline consumption forerunner of nation-wide rationing, because of transportation diversions to aid East Coast war industries.

●

More than 3,000 cars of fuel-oil products sold in Mid-Continent refining area for East Coast delivery. Remaining tank cars no more than sufficient to meet interior requirements, refiners say.

●

Insufficient butadiene recoverable from East Texas crude caused refiners' committee to abandon effort to secure $10,000,000 plant for its production.

●

Eastern Kansas gas operators seek modification of M-68 spacing rule. Want exception similar to that applied to Appalachian area.

●

District 2 supply and distribution subcommittee recommends sweeping changes in operations. General committee refers report back for further detailed analysis. Concerns elimination of cross hauls, back hauls, other efficiencies to free all possible transportation equipment.

●

Interstate Compact Commission will receive report from special committee on crude-oil reserves at Little Rock, Ark., meeting March 27 and 28. Some compacting states disagree with OPC's reserve figures, now used as a factor in certifying production quotas.

●

Supreme Court upheld FPC's authority to regulate wholesale natural-gas rates in Illinois and Indiana. Denied claim of company that value of "going concern" had been ignored in computing justified charges.

●

Last far-eastern oil fields remaining in hands of Allies—those in Burma and India—threatened by Jap drive north of Rangoon. They normally produce 9 to 10 million barrels annually.

●

Butyl rubber advanced as possible solution to tire shortage. Facilities for producing this synthetic cost about $700 per annual ton capacity, a little more than half as much as buna types from butadiene.

●

Crude-oil buyers in Texas are continuing pipe-line proration in several sections of West Texas. Some lines are running as little as 23 per cent of the allowable.

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sible uninterrupted operation of the vehicle concerned.

A close check will be kept on the amount of gasoline consumed by each commercial vehicle. If the number of ration coupon book covers filed against the vehicle license number indicates consumption in excess of estimated consumption, the vehicle operator will be called to account.

Proof of necessity is required from all applicants for special category rating. No one gets into a special category simply because his occupation may be listed in such a category. He has to prove that he needs extra gasoline. Decisions of the rationing authorities must be based on facts as presented in the duly certified applications. Rationing offices should not be asked to pass judgment on verbal representations.

These are the instructions issued by the Canadian oil controller directing distributors in details of delivering motor fuel under the rationing plan:

"On and after April 1 you are not permitted to sell or supply graded gasoline unless you detach ration coupons, or receive a valid Government requisition or special authorization.

"You must in turn surrender ration coupons, requisitions or special authorizations to your supplier in order to obtain replenishment of your gasoline supply. Coupons must be delivered to your supplier in accordance with the instructions of the Oil Controller.

"Gasoline must be supplied by you only in units, half units, eighth units or multiples thereof.

"The basic quantity of gasoline in a unit is 5 gal., but the Oil Controller may change the quantity of gasoline as circumstances require.

"There are eight categories into which all motor vehicles fall as follows: A, B, BX, C, D, E, Commercial and Tourist. Each category is identified by a distinctive color on the cover of the ration coupon book and the coupons it contains.

"Category A coupons are only valid during the quarter year designated on them.

"The license plate number of the vehicle for which the ration coupon book was issued will be shown plainly on the front cover in the lower right hand corner."

Procedure in Servicing

When servicing any motor vehicle you should proceed as follows:

1. Ask how many units of gasoline the driver requires.
2. Do not accept orders to "fill her up."
3. Take the coupon book from the driver.
4. Verify that the number on the front cover of the book corresponds with the number on the license plate of the car.
5. See that the color of the coupons is the same as the identifying color band on the front cover of the coupon book.
6. Be sure that the coupons in the book are attached to the book and that the book or coupons have not been mutilated or altered in any way.
7. If it is a Category A book, see that the coupon designates the quarter year in which the purchase is being made.
8. Tear out the number of coupons required for the number of units of gasoline being supplied, and return the book to the driver.
9. Always detach the coupons yourself.
10. Place the coupons in the envelope provided for that purpose by your supplying oil company.

Contrary to Law

It is unlawful for you to:

(*a*) Deliver graded gasoline without the surrender of coupons, Government requisitions or special authorizations.

(*b*) Deliver more or less gasoline than is authorized by the coupons, requisitions or special authorizations surrendered.

(*c*) Deliver graded gasoline to a vehicle bearing a license plate number different from the number shown on the front cover of the coupon book presented.

(*d*) Deliver *marked* gasoline to a vehicle registered or licensed for highway use.

(*e*) Accept coupons other than those which you detach yourself.

(*f*) Accept Category A coupons in any quarter year other than the quarter year designated on the face of such coupons.

(*g*) Dispose of coupons except by placing them in the envelope provided for that purpose by your supplying oil company.

(*h*) Commit a breach of any orders or regulations or instructions of the Oil Controller.

Warning

The penalties for any breach of the Oil Controller's orders are severe. If you are guilty of infraction of such orders, your pumps may be padlocked, and you render yourself liable to a fine up to $5,000 or imprisonment up to 5 years, or both fine and imprisonment.

Do not give out more gas than the amount covered by coupons, requisitions or special authorizations you receive because you cannot get more gas from your supplying oil company than the coupons, requisitions or special authorizations you turn in to it.

Technique for Refining War Products Explained

ARRANGEMENT of processing facilities and stages in the separation of hydrocarbons in standardized combination units for recovery of fractions necessary for 100-octane gasoline, synthetic rubber and toluene have been revealed for general information of the industry.

The accompanying flow diagram reveals a complete self-contained arrangement for production of alcohol, styrene, butadiene, motor gasoline, toluene, aviation gasoline and fuel oils.

The accompanying flow sheet represents only one of the many possible combinations which may be employed with modern processes to produce increased quantities of strategic war materials from crude petroleum. It is also apparent that there exists considerable flexibility in the relative proportions of gasoline and the strategic materials which are shown as being produced by the flow sheet.

Stages in Processing

Crude petroleum is charged to a fractionating tower to produce light gasoline, heavy naphtha and reduced crude. The distillation range of these two light cuts can, of course, be modified to suit the demands of the refiner and the requirements indicated by the characteristics of the crude petroleum. Under certain circumstances the light fraction will be available as aviation blending naphtha, while for certain other types of crude oil this would be impossible. The heavy naphtha fraction is shown going to a reforming unit which may be of the conventional thermal type or of a modern catalytic design. The products produced by this reformer will, of course, vary in characteristics depending upon the composition of the charge, the type of reforming unit used and the conditions under which the reforming operation is conducted.

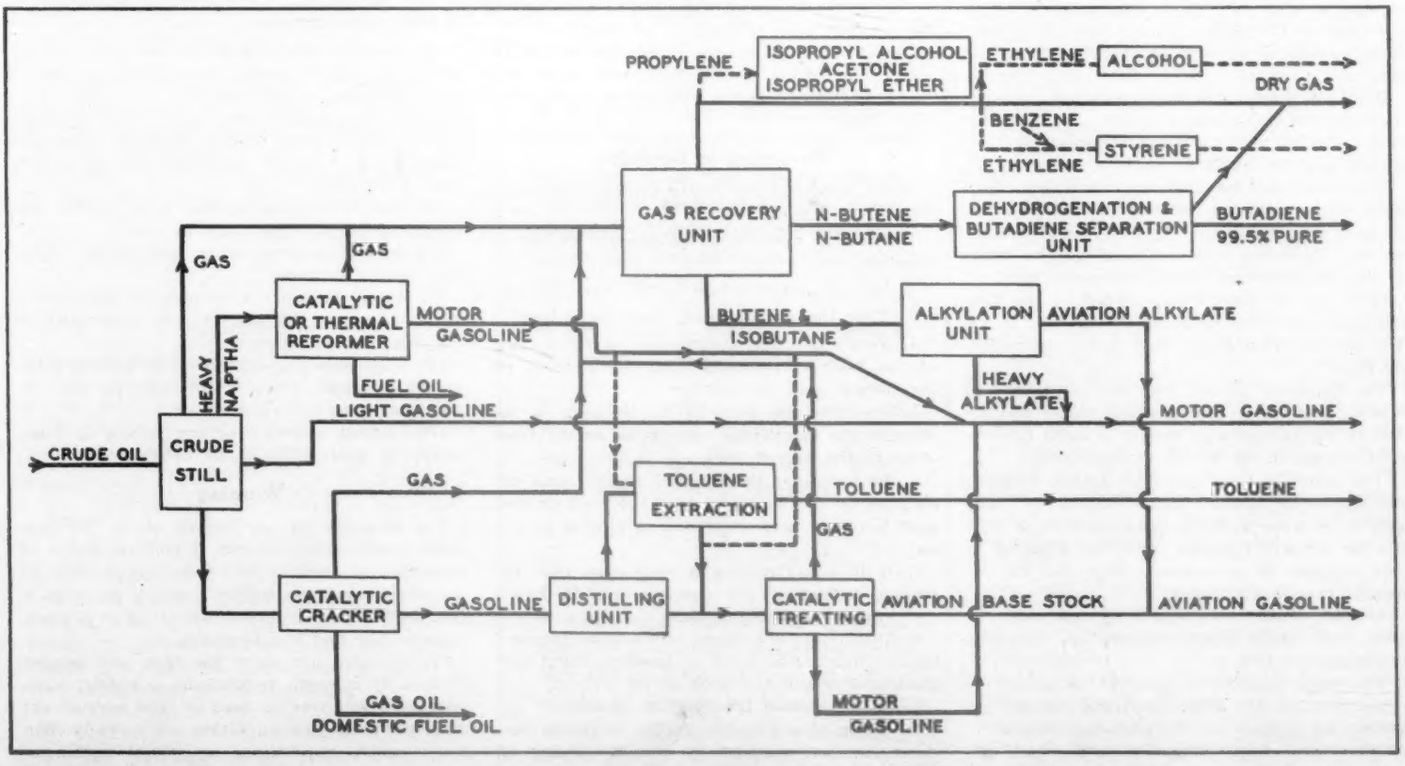
The reduced crude is shown going to a catalytic cracking unit. From this operation are produced gas, gasoline and gas-oil or domestic fuel-oil while the coke produced is consumed in the regeneration of the catalyst. It will be obvious to the petroleum technologist that the several streams of gas shown as going to the gas recovery unit contain not only fixed gases but also all the C_4 fractions from the several cuts. This will have to be accompanied by the use of debutanizing equipment, the details of which are not shown on the flow sheet.

The gasoline stream from the catalytic cracking unit may be fractionated to produce a heart cut containing toluene which is shown going to the toluene extraction unit. To this same extraction unit may be delivered reformed gasoline from the reforming unit, depending upon the toluene content of the reformed gasoline. The raffinate from the toluene extraction unit, together with the remainder of the catalytically-cracked gasoline, is shown going to a catalytic treating unit. The purpose of this unit is to improve stability and reduce olefin content of the cracked gasoline as well as to improve its octane number. After debutanization, the treated distillate is fractionated into two cuts, one of which becomes aviation blending naphtha and the other goes to motor fuel. The high octane number of this motor-fuel fraction makes this product ideally suited for a safety fuel if such is desired.

Flexibility in Separation

In the gas-recovery unit shown on the diagram such separations of the several hydrocarbons may be effected as the refiner's requirements dictate. Complete utilization of these gases would require the separation of ethylene and propylene as well as the recovery of the C_4 cut. The ethylene might be used to produce alcohol or styrene or any of a number of other compounds which may be required in the prosecution of the war. The propylene could be converted into polymer gasoline, isopropyl alcohol, acetone, isopropyl ether, or any one of many other desirable materials. Under certain circumstances it might be sent along with additional supplies of isobutane to an alkylation unit with a suitable catalyst to produce additional quantities of high octane blending agent for the manufacture of aviation gasoline.

The C_4 cut is shown as being split into two fractions, one containing normal butane with or without butene-2 while the other fraction contains isobutane, isobutene, butene-1 and possibly butene-2. The fraction containing normal butane goes to a dehydrogenating unit where normal butane and butene-2 may be dehydrogenated to butadiene. This unit also contains the necessary equipment to purify the butadiene produced so



Diagrammed stages in processing for recovery of aviation-gasoline alkylate, butadiene and toluene. This shows the OPC's concept of one such combination unit

as to make it available for the production of synthetic rubber. The other fraction of the C, cut containing isobutane goes to an alkylation plant where alkylate is produced for use in the manufacture of aviation gasoline. A small amount of high boiling alkylate is also produced in such operations and this material must go either to motor gasoline or to safety fuel.

Possible variations in operation of such a unit are readily seen. The production of butadiene may be increased by flowing additional supplies of butene-2 to the dehydrogenation unit, thereby cutting down on the production of aviation alkylate. Again, ethyl alcohol produced from ethylene might be converted into butadiene to increase production of this desirable material without affecting the production of aviation alkylate. The production of alkylate may be increased by taking all of the butene-2 available to the alkylation unit and by bringing in outside isobutane in order to alkylate the propylene from the gas stream. The production of aviation blending naphtha can obviously be increased by shutting down the production of toluene and throwing all of the available cuts from the reforming unit as well as the catalytic treating unit into aviation blending naphtha.

Although not shown on the flow sheet, it is obvious that fractions of the reformed gasoline on either side of the toluene cut might well go to aviation naphtha. Where thermal cracking equipment is available or the domestic fuel oil business does not require the product, the gas oil from the catalytic cracking unit may easily be charged to the thermal cracking equipment with the production of motor fuel as well as additional supplies of gases for the gas recovery unit. By operating such a thermal cracking unit under low pressure and very high temperatures, quite appreciable quantities of desirable unsaturated gases may be produced.

With such equipment it is seen possible to produce motor gasoline in quantities ranging from almost negligible percentages to the maximum producible from the crude petroleum charge. Such flexibility of operation is seen to be a valuable asset at such a time as this when demand for gasoline is decreasing and the requirements for butadiene, toluene, aviation gasoline and hydrocarbon chemicals are rapidly expanding.

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Whiteford and Arnold Promoted In British American Organization

ELECTION of W. K. Whiteford as president of the British American Oil Producing Co., and the Toronto Pipe Line Co. was announced this week by A. L. Ellsworth, president of the British American Oil Co., Ltd.

H. C. Arnold succeeds Mr. Whiteford as executive vice president in charge of the American

W. K. WHITEFORD

operations of both the producing and pipe line companies. Mr. Whiteford also becomes a director and an executive vice president of the British American Oil Co., Ltd., the parent concern.

During the past 7 years, the British American Oil Producing Co. has extended its operations to embrace the Mid-Continent, Gulf Coast, Rocky Mountain and California producing areas. Settled production of crude oil over this same period has increased sixfold. The Toronto Pipe Line Co. operations similarly were expanded and now cover purchase and transportation of crude in the East Texas pool, North Texas Seymour pool, Cutbank, Montana, field, and the Keensburg area in Illinois and Indiana. Mr. Whiteford's elevation to the presidency of the American companies and his appointment to the board of the parent company with his headquarters in Toronto, Canada, is intended to facilitate further expansion of United States activities and contribute to the continued success of the producing and pipe line companies whose head offices are in the Philtower Building, Tulsa.

Mr. Arnold came into prominence as one of the country's outstanding oil geologists with his discovery of the northern extension of the prolific Oklahoma City field and the first commercial production in Baylor County, Texas.

H. C. ARNOLD

He is a Kentuckian by birth, spent most of his boyhood in Claremore, Okla. He attended the University of Oklahoma and after his graduation at different times served with several Mid-Continent oil companies as geologist. In 1935 he joined the British American Oil Producing Co. to organize the geological department. In 1937 he was placed in charge of the land as well as the geological department and in 1939 was named vice president of both the British American Oil Producing Co. and the Toronto Pipe Line Co. His appointment as executive vice president in charge of United States operations of both companies followed this year.

Mr. Arnold takes an active part in the work of the American Association of Petroleum Geologists of which he is a member.

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Madison Defendants Win Another Damage Action

SIOUX CITY, Iowa, Mar. 17.—Holding that the plaintiff's suit could not be maintained as a class action, U. S. District Judge George C. Scott here today sustained motions for dismissal filed by defendant oil companies in an action brought by the Farmers Cooperative Oil Co. of Sheldon, Iowa, "for itself, and in behalf of all of its members" against Socony-Vacuum Oil Co. and other companies involved in the Madison oil case.

The action was another treble-damage suit growing out of the case tried almost 5 years ago in Madison, and plaintiff claimed that it and its 700 members had consumed gasoline and paid a higher price by reason of the buying program which formed the major charge at Madison.

W.P.R.A. Completes Plans for St. Louis Meeting March 25

The Western Petroleum Refiners Association has completed all plans for its annual meeting to be held March 25 at the Jefferson Hotel in St. Louis, Mo. The entire day will be devoted to business sessions.

At the morning session, C. L. Henderson, president of the association for the past 2 years, will talk. Wright M. Gary, OPC director of refining, will speak on "The Importance of Refining in Wartime Economy." At the conclusion of his talk there will be a round-table discussion.

Fayette B. Dow, Washington counsel of the association and assistant director of the Office of Defense Transportation, will speak at the afternoon session. The election of officers will conclude the meeting.

An invitation to attend the meeting is extended to all refiners and members of other branches of the petroleum industry, and the manufacturing, chemical, transportation and service companies closely allied with the refining industry.

Special Committee Studying Exploration-Program Aspects

HOUSTON, Tex., Mar. 16.—A factual study of five specific points related to petroleum exploration has been launched by a special subcommittee created here recently by the District 3 OPC production committee.

The subcommittee is composed of six geologists and engineers. The group is headed by F. H. Lahee, chairman, chief geologist for Sun Oil Co., Dallas. Other members are Sidney A. Judson, Phil F. Martyn, R. R. Morse, Ed W. Owen and Paul Weaver.

STATE CAPITALS...

Arkansas Commission Hears Plea For Natural-Gas Development

TESTIMONY GIVEN AT A HEARING of the Arkansas Oil and Gas Commission last week revealed a greatly increased demand for natural gas in southern Arkansas by reason of the industrial development of the area. In addition to the members of the commission and Director Alec M. Crowell, there were present Grady Vaughn, director of production, and D. E. Buchanan, director of natural gas and gasoline sections for District 3, OPC, and E. G. Dahlgren, technical secretary of the Interstate Oil Compact Commission.

After an introductory statement by O. C. Bailey, chairman of the commission, R. O. Garrett, Arkansas Louisiana Gas Co., outlined the expected demand and the plans which had been made to meet it. He said that the company had contracted to deliver a maximum of 61,000,000 cu. ft. of gas per day to war industries in the vicinity of Malvern and Benton, Ark., and an additional 19,000,000 cu. ft. for other defense plants near Little Rock and Pine Bluff. This would require a daily production of 96,000,000 cu. ft. of sour gas after taking into consideration shrinkage and plant use. He said that contracts had been executed with a majority of the operators in the Dorcheat and Macedonia fields and were being negotiated with the remainder of the operators as well as with operators in the McKamie field.

In addition to the above amounts, approximately 88,000,000 cu. ft. will be required to serve the industries and population brought into the region by the defense plants. A pipe line is being constructed to serve the plants which include an aluminum project utilizing Arkansas aluminum ores.

Continued Development Essential

Mr. Garrett pointed out that if further development of the sour-gas fields was not permitted, it would be necessary to obtain the gas from distant points in Louisiana and Texas. His company had selected a combination of treating processes which would (a) remove 99.88 per cent of the H_2S content of the gas making it available for conversion into sulfuric acid or sulfur; (b) remove and make available for conversion into aviation gasoline or rubber, 83 per cent or 98 per cent, respectively, of the isobutane and normal butane contained in the sour gas, with an estimated yield of 17,900 gal. of 95 per cent pure isobutane and 19,900 gal. of 95 per cent pure normal butane daily; (c) remove and make available for conversion to alcohols or for other purposes not less than 25 per cent of the propane content, or 11,500 gal. of 98 per cent pure propane; (d) remove and make available for use as motor-fuel blending stock the heavier-than-butane hydrocarbons in the gas, or about 21,800 gal. of 13.8 R.v.p. natural gasoline; (e) reduce the dew point to approximately 38° F.; and (f) make available to the pipe line approximately 84 per cent of the volume of the sour gas which will meet standard specifications for uncontaminated natural gas.

Supplementing Mr. Garrett's statement, J. C. Hamilton, division engineer for the Arkansas Louisiana Gas Co., pointed out that the pipe line to the aluminum plant would be completed before the sweetening and gasoline plant would be ready. It is, therefore, essential that the wells necessary to supply the gas should also be drilled and placed on production before the construction was completed. If compelled to look elsewhere for the gas, it would take 1½ to 2 years to get it to the aluminum plant. E. P. Farmer, general superintendent for the natural gas division of the company, who supervised the plans for the plant, said that he estimated that between 70 and 75 tons of sulfur would be produced daily at the sweetening plant.

Butanes to Be Recovered

R. A. Howe, vice president and manager, McKamie Gas Cleaning Co., testified that his company proposed to install a plant to handle 25,000,000 cu. ft. of gas daily from McKamie which would yield approximately 12,000 gal. of natural gasoline, 12,200 gal. of butane and isobutane, and 20,000,000 cu. ft. of sweet marketable gas. An overload of 5,000,000 cu. ft. would be possible which would increase the quantity of the products proportionately.

George A. Wilson, Standard Oil Co. of Louisiana, testified that his company had been using the condensates and light hydrocarbons from the McKamie, Macedonia, Dorcheat, and Big Creek fields to mix with the more waxy and viscous crude of East Texas to speed up the movement of oil through the company's pipe lines. It was his opinion that shutting in of these fields resulted in an immediate reduction of 5,000 bbl. per day in the effective capacity of the line. He stated that his company was buying the entire output of light hydrocarbons from these fields and, in answer to a question by the chairman as to the effect of increasing distillate production another 7,000 bbl. by further development, said that this increased quantity, augmented by more East Texas crude would go far to relieve the company's present shortage of 9,500 bbl. daily. He pointed out that prior to the emergency, Standard of Louisiana shipped 18,000 bbl. to the East Coast but that they were now shipping 100,000 bbl., of which 60,000 bbl. had to go by tank car.

Following discussion of the requirements from these fields, representatives of the operators recommended continuance of drilling on the basis of present spacing, which is 160 acres in the McKamie field. Dorcheat is underlain by oil and which has been drilled to date on 40-acre spacing. It was recommended to complete the drilling of this field on 80-acre spacing. Macedonia is now being developed on 80-acre spacing and it was recommended that this continue.

The possibility of increasing production at Dorcheat and Macedonia to above the market deman of the gas and recycling the remainder was considered but evidence was presented which showed that the cost would be greater than the expected return from additional distillate recovered.

CALIFORNIA

CALIFORNIA ALLOCATION SCHEDULES for March were approved by the Office of Petroleum Coordinator March 7 and individual well schedules were prepared and forwarded to operators. This is the earliest that allocation schedules have been approved. Earlier approval will assist operators in conforming with allowables.

Coordinator Ickes has started action to suspend all wells from producing in California fields that are being produced or have been drilled in violation of M-68. Production of oil and gas from suspended wells must not be moved from fields or processed in any way under penalty of having restraints imposed on refiners.

The high demand for California heavy oil and the probability that a critical condition may develop within a few months makes it mandatory to stimulate production of heavy crude as soon as possible. An upward revision in heavy-crude-oil prices and modification of drilling restrictions would accomplish desired results.

TEXAS

CRUDE-OIL PURCHASERS nominated to buy 1,641,096 bbl. daily in April at the state-wide hearing Monday. One buyer said a downward adjustment would be made later. Nominations for April are 264,075 bbl. below the March figures but are higher than some observers thought they would be in light of transportation restrictions out of District 3.

East Texas bottom-hole pressure declined 1.86 lb. per sq. in. in February, the commission was told.

ILLINOIS

REPRESENTATIVES OF THE ILLINOIS oil industry on March 13 presented a resolution to Henry Pope, Chicago, Ill., tire administrator, seeking an allotment of tires to persons employed in the fields "in order that an adequate supply of fuel will be available for the successful prosecution of the war."

The resolution was delivered by Joseph Marchesi, assistant director of the state Department of Mines and Minerals, and bore the signatures of a number of leaders of the Illinois petroleum industry.

OKLAHOMA

HEARING ON THE APRIL demand for Oklahoma crude will be held at Oklahoma City March 26. Allowables for the various fields will be established upon the basis of evidence submitted and the quota certified by the Office of Petroleum Coordinator.

KANSAS

THE PRORATION HEARING for establishment of April production quotas will be held at Wichita, Kans., March 24. Purchasers of Kansas crude have been instructed to submit nominations covering their requirements in April.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Rationing

When gasoline rationing became effective Thursday in 19 states of the Atlantic seaboard and the Pacific Northwest and in the District of Columbia, the oil industry was presented with an entirely new problem.

There were gasolineless Sundays in the other war, due to a deficiency in supplies. Shortages, based on temporary inability to produce, is one thing. Rationing brought about by restrictions in tanker shipments, which explains the present situation, is something else. It is far easier in the oil business to solve a production problem than it is to find a solution for a condition brought by a transportation bottleneck.

Those from the industry and OPC who investigated conditions and made recommendations, and the government officials who ordered the rationing, admit the program now effective is probably a makeshift with later developments to determine final policies. It may be necessary to pool all the land-transportation facilities of the industry and make restrictions in consumption nationwide so that curtailments will not be too severe in any one area. The necessity of conserving rubber may shortly become a controlling factor in determining gasoline use.

Regardless of the form it eventually takes, much of the confusion will be eliminated and market dislocations minimized, if operators in all branches of the industry realize from the start that rationing anywhere is certain to have reactions throughout the entire industry. The areas which are now rationed have nearly two-fifths of this country's motor-fuel demand. The 20 per cent cut will reduce the daily demands about 135,000 bbl.

You can't remove that much market without affecting operations everywhere. Often in the past operators have realized too late that petroleum's problems in supply and demand are never sectional and that every barrel of oil is marketed under conditions which are nationwide and world-wide in scope.

In this instance, refiners are losing about 7.5 per cent of the national market for their principal product. Operators within the rationed areas are directly concerned and the reactions will quickly spread to include every oil operation of the entire country. In fact, the reductions in oil shipments to the East, over the past few weeks, have been felt in refinery markets throughout the United States. The recent weakness in gasoline markets, first in the Gulf Coast and now in the Mid-Continent, Middle West and California, is unwanted evidence.

The immediate duty of every operator is to make adjustments in plant processing to provide for this contraction in motor-fuel outlets. This should include studies as to how revised yields of products will affect all markets. Failure to act means additional reductions in prices.

At the same time, there is no reason to become panicky. The present rationing schedule reduces the total oil demand in this country less than 4 per cent. The several investigations out of Washington in recent months have all led to the common conclusion that this country cannot make a substantial reduction in its petroleum use and maintain the production economy necessary to support the war program of the United Nations.

There is no substitute fuel for the millions of homes which are heated by oil. Oil consumption by agriculture, industry, transportation and the utilities is largely essential and there are no adequate substitutes. The motor vehicle will continue to be the backbone of this country's transportation. The military uses of oil will expand steadily.

The petroleum industry is going to retain most of its markets, even under the most adverse conditions. The immediate job is to watch changes in demand and make the needed operating adjustments quickly in fields and plants. The industry's inherent operating flexibility if properly used is its greatest asset at this time.

Oil Man Assigned Vital Liaison Task in Industry's War Effort

GENERAL supervision of negotiations between the Government and industry in construction of facilities for production of war materials from petroleum hydrocarbons has been assigned to R. Otis McClintock, Tulsa banker and oil man. His title in Washington, D. C., where he arrived this week to assume emergency duties, is liaison officer between the War Production Board, Office of Petroleum Coordinator and Reconstruction Finance Corp. This is one of the highest ranking positions assigned to an oil man in the war government.

Significance of the task of coordinating WPB, OPC and RFC functions as related to the oil industry is disclosed by examination of each agency's function in the war program. WPB controls materials needed to build the special refining facilities, drill the wells, and the transportation equipment. RFC is the agency through which all government purchases of war products are made and financing extended for the 100-octane plants, butadiene and toluene units. OPC examines details of each new project and makes recommendations on practicability and usefulness in the war program after which the other two agencies act.

Mr. McClintock's job will be that of coordinating the work of the three bureaus and he will be in position to expedite projects that have bogged down for the lack of attention from any one of the agencies.

He was virtually drafted for the liaison position by Donald Nelson, director of WPB who asked Mr. McClintock to accept the job "for the duration." The Tulsan accepted the assignment for 3 months.

He literally grew up in the oil business. He was an office boy for the old Gypsy Oil Co., became a scout, land man and 4 years after graduating from high school formed his own oil company. Three years later, he was offered the post of vice president of the Gypsy Oil Co. and the Gulf Pipe Line Co. of Oklahoma.

R. OTIS McCLINTOCK

In 1925, he joined Waite Phillips as vice president of the Philmack Co. and continued in this capacity when holdings were consolidated with the Independent Oil & Gas Co.

Mr. McClintock has been a director of the First National Bank & Trust Co., Tulsa, since 1919 and president since 1928.

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Butyl Rubber May Become Most Suitable Material for Tires

NEW YORK, Mar. 16.—The use of butyl, newest and least expensive of the synthetic-rubber products derived from petroleum hydrocarbons, in the manufacture of whole tires—carcass, tread, and tube—may eventually solve the shortage in this country. This possibility was advanced last week by W. S. Farish, president of the Standard Oil Co. (New Jersey), who said that "an investment in synthetic-rubber producing facilities of less than $15 per passenger car will provide sufficient rubber to keep America's automobiles on the roads."

"It would seem," declared Mr. Farish, "that economic loss and diversion of labor and materials from the war effort would probably be less by providing the synthetic rubber for all essential transportation needs of the country." His statement referred to the assumption that spring wheels, rope tires, and other substitutes may be proposed.

Standard of New Jersey is embarked on a program that will provide for the United States and Canada a total of more than 200,000 short tons of synthetic rubber and raw materials for buna rubber by the middle of 1943.

"Fulfillment of military needs is, of course, the immediate necessity," Mr. Farish said in reviewing the oil industry's program. "Those needs," he continued, "must be taken care of from the stock pile of natural rubber, plus the output of synthetic-rubber units included in the program announced recently by Secretary of Commerce Jesse H. Jones, plus natural production still available to the United Nations. But after these needs are provided for the only limitation on supply of synthetic rubber for civilian use is shortage of fabricated steel and other construction materials required for the necessary plants.

"It is difficult to see how any substitute for rubber tires could be provided with an estimated investment cost of less than the $15 per car for plants to make synthetic rubber.

"Synthetic rubber of the buna type has always cost at least twice as much as the natural product," he continued. "Even in very large quantities this synthetic rubber would cost about 30 cents a pound, against a normal price for natural rubber of less than 15 cents a pound. For large-scale operations, including the raw materials needed, the investment required to produce buna rubber is $1,000 per ton of yearly capacity—perhaps, $700,000,000 to $800,000,000 for the entire needs of the country, military and civilian.

"A new type of synthetic rubber developed by us, known as butyl, can be produced for an investment of about $700 per ton of yearly capacity. This rubber has never been produced commercially but we have made it for some time experimentally, and large samples have been tested in tires by two of the large rubber companies. There is good reason to hope that whole tires—carcass, tread, and tubes—can be made successfully from this synthetic rubber. These tires would not at once be comparable with the buna tires or the natural-rubber tires now in use, but they should give satisfactory service at speeds up to at least 35 m.p.h. and should last for 10,000 miles. The cost of this rubber is estimated to be about one-half the cost of buna rubber.

Mr. Farish said that even before the outbreak of war in the Pacific his company had already spent or contracted for $12,000,000 on its own responsibility in building plants and providing raw materials for making synthetic rubber from petroleum.

"Prior to the day Japan attacked us, and while natural rubber was still being shipped in large quantities from the Far East, domestic affiliates of Standard Oil Co. (New Jersey) had in operation about 5,000 tons a year of synthetic-rubber capacity, intended to produce specialty rubber and the raw materials needed to make it. We also had under construction then nearly 15,000 tons additional capacity, all financed by ourselves in the hope that special technical uses could be found for this quantity of synthetic rubber."

Mr. Farish stated that there are available from oil and gas abundant raw materials for all the synthetic rubber the nation needs, without drawing upon raw material essential to other war production.

"There are no patent questions involved. Patent agreements were arranged and signed with government approval last December covering all questions bearing on buna rubber. Basic buna-rubber patents have been allowed 1 per cent of the cost of the rubber. On this basis the royalty would amount to about 2.5 cents on a $15 synthetic-rubber tire.

"On butyl rubber our company is offering to industry and the Government royalty-free licenses for the duration of the war and reasonable royalties (to be determined by government authorities) thereafter."

•

Oklahoma Scrap-Metal Drive To Be Conducted April 8-18

OKLAHOMA CITY, Okla., Mar. 16.—An intensive drive to collect scrap metal and other salvable materials in Oklahoma, particularly for idle steel in the oil industry, will be conducted between April 8-18.

E. H. Moore, Tulsa oil producer, is state chairman. At an organization meeting here today he outlined the program.

Mr. Moore said country and city salvage committees will be directed by J. William Cordell, executive secretary of the state defense committee. Scrap dealers have agreed to purchase for delivery to steel mills all metals delivered to their yards. They will pay from $7 to $10 per ton.

"This salvage for victory campaign is vital to every man, woman and child," Mr. Moore said. "We urge everyone to look around their premises to locate every bit of scrap metal, rubber, paper or rags now lying idle. These materials must be placed in the channels of trade to keep America's war effort going full blast."

New Type Secondary Recovery

"Above: Two wells under well head boxes, one economically pumping 4400 B. P. D., 1½% Oil, the other 2000 B. P. D. 1% Oil."

"Left: 15 H.P. REDA PUMP has produced 192,650 barrels of fluid including 30,058 barrels of oil in 261 days."

"Below: Power cable entering well head, fluid discharged through tubing shown. Pumping 700 barrels fluid with 115 barrels oil daily."

REDA revives another old oil field!

WHERE: The old Dupo Field of Illinois, discovered in 1928. Producing from the Trenton Lime. 93 wells drilled, many town lot locations.

CONDITION: By 1938 the town lot wells were completely abandoned; it became impossible with equipment in use to produce enough fluid from the large capacity wells to economically recover the oil; high lifting cost made most small capacity wells unprofitable. Water produced had high sulphur content. Production for the entire field in April, 1940, was only 2260 barrels of low gravity oil.

SOLUTION: In May, 1940, the first REDA PUMP was installed and by September, 1941, fourteen REDA UNITS of various sizes from 7 1/2 h.p. to 60 h.p. were in operation and had run for a total of 3351 days. Over 6,500,000 barrels of fluid had been pumped and *230,719 barrels of oil produced,* an average of 1940 barrels of fluid and 69 barrels of oil per day per well.

The field is currently producing over *12 TIMES* as much oil as before the REDA PUMPS were installed.

REDA PUMPS employed as this secondary recovery method have achieved the low lifting cost of 0.68 cents per barrel of fluid and 18.9 cents per barrel of oil, with the result that the ultimate recovery from old wells in the field has been materially increased and new wells drilled which otherwise would not have been profitable.

For complete description of Reda Equipment see 1942 Composite Catalog, pages 2024-2025, and 1940-41 Producing Equipment Directory, Section M, pages 2-3 and 9-12.

REPRESENTATIVES: Oklahoma City and St. Louis, Oklahoma; Midland and Seguin, Texas; Centralia, Illinois; Los Angeles, Calif.

REDA PUMP CO.

BARTLESVILLE, OKLA.

THE ONLY SUBMERGIBLE ELECTRICAL CENTRIFUGAL OIL WELL PUMP

Pacific Coast Operators Are Critical of OPC Orders

By L. P. STOCKMAN

Two papers presented at the Pacific Coast district meeting of the A.P.I. Division of Production are published in this issue on Pages 35, 37, 49 and 50. The papers deal with viscosity of crude-oil emulsions and thermal logging of producing oil wells.

LOS ANGELES, Calif.—A new attendance record was set for the Pacific Coast district, Division of Production, A.P.I., when over 1,000 members and guests assembled in the Biltmore Bowl for the banquet and business meeting March 10.

L. L. Aubert, president of Bankline Oil Co. and a member of the Conservation Committee of California Oil Producers, presented a general outline of conditions confronting the oil industry. He was followed by A. C. Rubel, vice president of Union Oil Co. and past chairman of the Pacific Coast district, A.P.I., who presented his views with respect to crude oil and other important phases. P. S. Magruder, assistant manager, gas department of General Petroleum Corp., outlined present and anticipated conditions affecting the natural-gasoline industry, and John F. Dodge, professor of petroleum engineering at University of Southern California who recently completed a survey of the California natural-gas industry, presented his conclusions based on the survey.

The symposium brought out a number of important factors including: (1) fuel-oil production must be stimulated and will reach a critical stage within a few months; (2) California can produce about 700,000 bbl. per day for a year or more; (3) the liquefied-petroleum-gas business will be forced to contract and to rely more on propane as butane is a source of isobutane and butadiene; (4) regulatory measures and administration of the various orders should be streamlined; (5) all orders and regulations should be immediately clarified and (6) all matters must be subordinated to winning the war.

Mr. Rubel declared that allocation of production within the state is no longer a problem of dividing the oil uniformly among producers with little or no regard to the quality of the oil or the products of its production. It is now necessary to meet the requirements of the finished products in terms of fuel oil, aviation gasoline and other wartime products.

Mr. Rubel insisted that clarification is needed of OPC affecting the contractural relations of operators with landowners. He referred to the restrictions in order M-68 and its companion, P-98. He criticized failure of orders to recognize the zonal segregations common in California and particularly to Los Angeles Basin.

Santa Fe Springs, he said, for example, is not a single oil field but seven separate and distinct fields superimposed with as complete and natural separation as though they were in seven separate ccunties. The restriction as to surface acreage here has no meaning within the obvious intent of the order. Ten surface acres may contain seven wells, one to each zone, and still in each zone there would be but one well to 10 acres. When Mr. Rubel's paper came up for discussion at the open forum, Joseph Jensen stated he had prepared a grid on the 40-acre spacing and did not find very many fields in Los Angeles Basin wide enough to permit three locations across the axis of the structure.

Mr. Magruder, in covering the natural-gasoline industry said that isobutane is difficult to extract and comes chiefly from the gas accompanying light crude. Mr. Magruder suggested a complete survey to determine the potential possibilities of producing isobutane. This survey should include gases leaving natural-gasoline plants and refineries and also the amount in motor fuel.

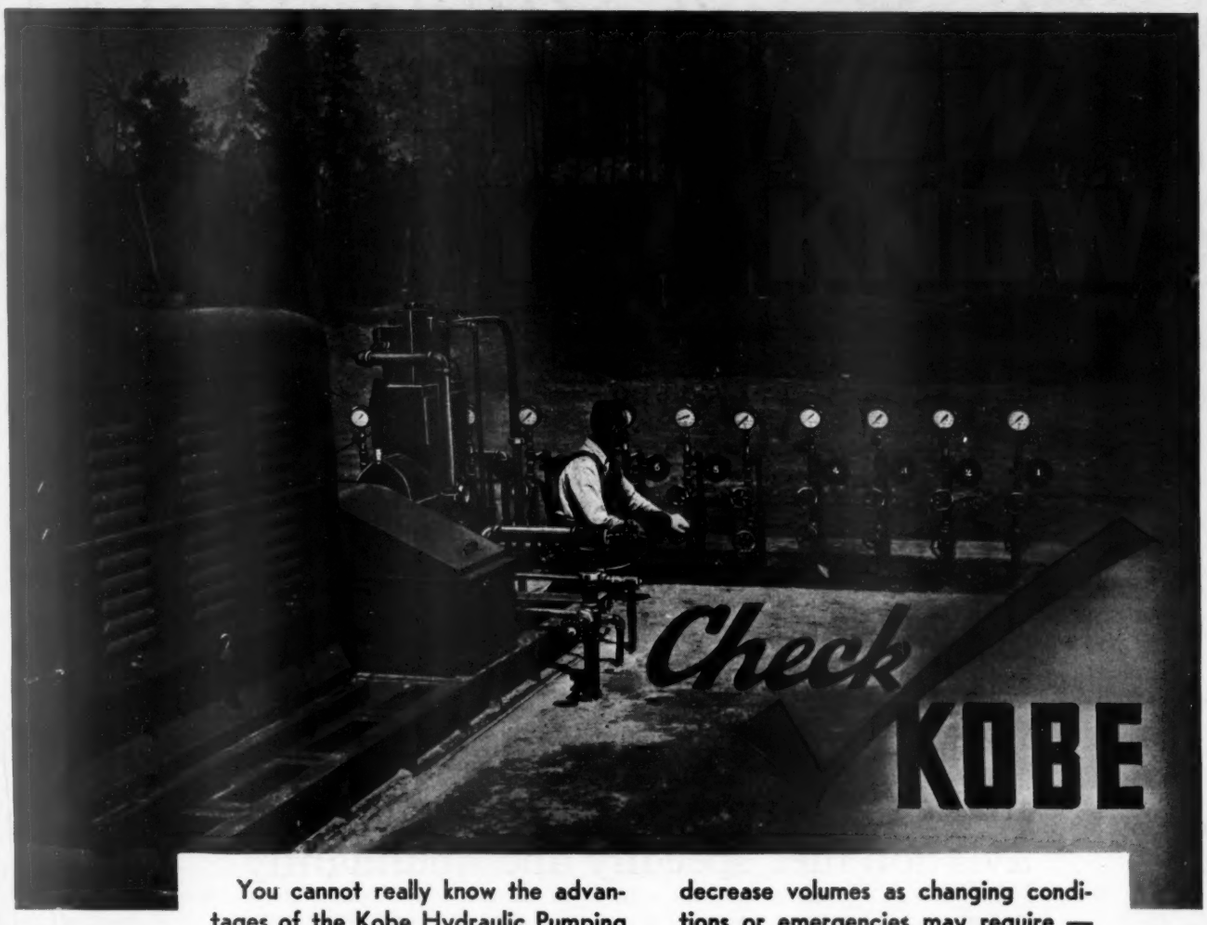
Professor Dodge indicated that all gas consumed in Southern California is produced from oil fields. For the state as a whole, 80 per cent of natural gas comes from oil fields and 20 per cent from dry-gas fields. Usually in the past there has been a new field or old field producing large quantities of natural gas but the few discoveries in Los Angeles Basin during recent years have reversed the order so that the industry is not worrying about gas waste but rather how production may be stimulated. On the highest peak day during the past winter, demand for gas in the state reached 1,220,000,000 cu. ft. The February allowable was calculated to produce 569,000,000 cu. ft. from oil fields, 385,000,000 cu. ft. from dry gas fields and 90,000,000 cu. ft. from storage fields. This amount totaled 1,043,000,000 cu. ft. which was substantially below the peak load. Professor Dodge recommended that (1) additional gas uses be avoided; (2) change over to oil fuel wherever possible; (3) decrease the use of natural gas in the field; (4) increase the use of underground storage facilities; (5) develop flexibility where possible; (6) rearrange gas transmission systems as this will make more San

(Continued on Page 84)

Ernest E. Parks, Los Angeles consulting engineer, was elected chairman of the Pacific Coast district

Bruce H. [illegible] Corp., retiring chairman of the district

A. C. Rubel, vice president of Union Oil Co. of California, appealed for clarification of OPC orders



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You will be agreeably surprised by the many new ways that Kobe multiple pumping will help you—to obtain lower installation costs — to produce your wells better — to reduce and keep operating costs down — to increase or decrease volumes as changing conditions or emergencies may require — other ways too numerous to list here.

To *know* you know your pumping problems is a mighty satisfactory feeling. Be sure *you* know how Kobe can help you by checking this modern system on your own pumping equipment needs. The Kobe Technical Service Department's wide experience in pumping problems is available to help you in every possible way. Call the nearest Kobe representative and get the facts.

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HYDRAULIC PUMPING SYSTEM

After Victory

U. S. refiners need not fear "over-capacity" of 100-octane plants after the war, because there will be wide use of this high-octane fuel in planes and even in tomorrow's motor cars, according to Wright Gary, refining director of the petroleum coordinator's office, in a speech prepared for the annual meeting of A. I. M. M. E.—PLATT'S OILGRAM, February 12, 1942

No matter how much 100-octane gasoline it takes to see us through to victory, the American refining industry will make it—must make it

Now, Universal processes are ready to make the constituents of this vital fighting aviation fuel, speedily and abundantly

And after the war is won, when new cars come off the assembly lines once more, Universal processes will still be running for all they are worth, producing better gasoline for the American motorist than he ever had before

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

THE REFINERS INSTITUTE OF PETROLEUM TECHNOLOGY

McCollum, Knowlton, Franklin to Participate in A.P.I. Symposium

L. F. McCollum, president of the Carter Oil Co.; Don R. Knowlton, director of the Production Division of the Office of Petroleum Coordinator, and Wirt Franklin, OPC director of production for District 2, will participate in a discussion of war conditions in the petroleum industry at the Friday afternoon session of the A.P.I. Mid-Continent district meeting to be held in Tulsa, March 26 and 27. H. M. Stalcup, vice president of the Skelly Oil Co., will preside.

L. F. McCollum, Tulsa, president of Carter Oil Co., will participate in panel discussion at Mid-Continent district A.P.I. meeting

It is expected that the Friday afternoon symposium participated in by representatives of the Government and the industry will be one of the most interesting meetings held since the United States declared war. Mr. Knowlton before joining the OPC staff several weeks ago was general superintendent of production for the Phillips Petroleum Co., and Mr. Franklin for many years was an independent operator and a former president of the Independent Petroleum Association of America. Mr. Knowlton will answer questions following his talk.

The Thursday and Friday morning sessions of the A.P.I. meeting will be devoted to the presentation of technical papers. The program for the meeting was published in March 12 issue of The Oil and Gas Journal, Page 32. All meetings will be held at the Mayo Hotel.

P. H. Bohart, vice president of the Gulf Oil Corp., Tulsa, will preside at the "Win the War" dinner to be held Friday night at the Mayo Hotel. E. DeGolyer, director of conservation of OPC will be the principal speaker at the dinner. Several entertainment features have been arranged.

George Berlin, Skelly Oil Co., Pampa, Tex., is chairman of the Mid-Continent A.P.I. district. The following are chairmen of committees in charge of arrangements for the meeting at Tulsa: Mr. Stalcup, general chairman; program, C. D. Miller, Barnsdall Oil Co.; registration, H. W. Ladd, Stanolind Oil & Gas Co.; meeting room facilities, A. J. Kerr; entertainment, Dee Sykes, Baroid Sales Co.

●

Jap Drive in Burma Threatens Last Allied Far East Fields

NEW YORK, Mar. 16.—Loss of the last oil fields of the Far East remaining in the hands of the United Nations is in prospect as Japan pushes forward in her invasion of Burma. Invading Nipponese forces are reported preparing for a thrust northward from the line they have established across lower Burma from Thailand to the Bay of Bengal. Their furthest point of advance, reported to be about 50 miles north of Rangoon, is less than 150 miles south of the southernmost Thayetmyo fields, Padaukin and Yenanma.

Burma's principal fields stretch along both banks of the Irrawadi River for a distance of about 100 miles from north of Prome to south of Myingyan. They produce approximately 7,700,000 bbl. of oil annually. The Irrawadi fields are divided into three groups with the minor Thayetmyo fields on the south, some 175 miles north of Rangoon. Next, about 50 miles further north, are the Minbu fields on the west bank of the Irrawadi and the Yenangyaung field on the east bank. Almost directly north of the latter lies the Singu field and north and west of it, across the Irrawadi, lies the Yenangyat field. There are two other oil areas in Burma, the Upper Chindwin or Indaw field and the unimportant Akyab-Kyaukpyu area on the islands of Eastern Baranga near Akyab and Ramri on the Bay of Bengal.

Burma's most important fields are Singu and Yenangyuang each of which produces in excess of 3,000,000 bbl. annually and which, together, account for 90 per cent of Burma's total production. The Singu field is operated principally by the Burmah Oil Co. which transported the crude through a pipe line to its Rangoon refinery. This line was built years ago with a 4-in. extension from Yenangyat to Singu, an 8-in. line from Singu to Yenangyaung, and a 10-in. line from Yenangyaung to Rangoon. The line is more than 275 miles long. The Rangoon refinery has a rated crude capacity of 20,000 bbl. per day with 3,000 bbl. cracking capacity. This refinery, reported decommissioned, is now in the hands of the Japanese.

Many unusual problems are encountered in the operation of the Burma fields. Most of the wells are pumped though some are produced by gas lift. The unusual problems are the result of natural forces. When the Irrawadi periodically floods, much of the producing area is inundated.

The only other field of any consequence in Burma is the Upper Chindwin or Indaw field probably one of the world's most inaccessible

North of the Indaw field is the Digboi field, Assam's only field of consequence though the old Badarpur field, 275 miles to the southwest, produced as much as 8,000,000 bbl. in 1920. Digboi has been producing around 1,300,000 bbl. per year and the oil is refined at a local refinery. The field and refinery are the properties of the Assam Oil Co., a Burmah Oil Co. subsidiary.

●

Extensive Changes in District 2 Discussed at Chicago Meeting

CHICAGO, Mar. 16.—Plans for extensive changes in the present system of supplying and distributing petroleum products in 15 mid-western states to facilitate crosscountry movement of petroleum products to the East Coast area were discussed at a meeting here last week of the supply and distribution committee of District 2.

C. R. MUSGRAVES

A subcommittee of the supply and distribution committee headed by C. R. Musgraves, including M. W. Vandeveer, H. L. McReynolds, P. E. Lakin, B. C. Graves, and Harry J. Kennedy, presented a report recommending various methods for exchanges, alterations in methods of transportation, and pooling of transportation facilities so as to permit greater movement to the East Coast and forestall a shortage there.

The meeting was called by Frank Phillips, general chairman of District 2. Among those present were E. G. Seubert, chairman of the committee; Howard Marshall, general counsel of the OPC; R. L. Minckler, director in charge of the new Petroleum Supply Division of OPC; Wirt Franklin, senior director of District 2; Charles K. Schwartz, counsel of District 2; Walter DuMont, director of transportation for District 2, and various other government representatives.

Thirty-two companies operating in the Middle West and Mid-Continent had representatives present, and there were also five representatives of the petroleum industry organization of District 1.

DEATHS

HARRY W. GALEY, 45, of Tulsa, lease man for Gulf Oil Corp., died March 13 in a Chicago hospital, after an illness of 2 months. Mr. Galey was the son of John Galey, of the firm of Guffey & Galey, which was instrumental in developing Spindletop field. He joined Gulf in the early days of the Burbank boom. He is survived by his widow and three sons.

HENRY GORDON FROST, 51, organizer and president of Havana Oil Co., Coast-Wide Oil Co., and Occidental Royalty Co., and a partner in Frost & Dunnam, Inc., died of a heart attack at a Houston, Tex., hospital. He had gone to the hospital for an operation which was performed March 9. He died the next day. Surviving are his widow, a daughter and a son.

SYLVESTER A. SHANNON, 91, retired oil producer of Derrick City, Pa., died last week at his home after an illness. Mr. Shannon was active until about 15 years ago, when he retired. A son and a daughter survive.

FRED W. DUMRAESE, 45, vice president and general manager of the Texas Gulf Producing Co., Houston, Tex., died Sunday night at a hospital in San Antonio, Tex., from injuries sustained in an automobile collision just outside of the San Antonio city limits. His wife was seriously injured and is confined to the hospital.

PRIORITIES.

Order P-98 Amended and Extended. Changes Mostly in Technical Language. Effective Until May 15

PRODUCTION, TRANSPORTATION, REFINING AND MARKETING OF PETROLEUM PREFERENCE RATING ORDER NO. P-98, EXTENDED AND AMENDED

Principal provisions of the original P-98 have been retained in the amended and extended order reproduced here. The new order expires May 15.

Natural-gasoline plants are given the same status as refineries in the new order and a new inventory basis is provided, defining minimum practicable inventory as one not exceeding 90 days' supply.

Repair and maintenance parts may be obtained for equipment carried as a fixed asset, if the material can be properly charged to expense. Countersignature of purchase orders by district directors is required on all transactions involving more than $500.

Section 1041.1 PREFERENCE RATING ORDER. For the purpose of facilitating the acquisition of materials for the production, refining, transportation and marketing of petroleum, preference ratings are hereby assigned to deliveries of necessary material upon the terms hereinafter set forth:

(a) Definitions.

1. *"Person"* means any individual, partnership, association, business trust, corporation, governmental corporation or agency or any organized group of persons, whether incorporated or not.

2. *"Petroleum"* means petroleum, petroleum products and associated hydrocarbons including but not limited to natural gas.

3. *"Main gas trunk line"* means any pipe line and appurtenant structures carried as a "trunk line" on the books of an operator in accordance with the regulations of any duly constituted public regulatory body or, where there is no duly constituted public regulatory body regulating the accounting procedures of the operator, carried as a "trunk line" on the books of an operator for federal income tax purposes.

4. *"Production"* means the discovery, development and depletion of petroleum pools; the operation of any stationary gathering systems or surface connections for the conveyance of petroleum (other than natural gas) to the first valve on the discharge side of the field shipping tank battery at which petroleum is gaged; the operation of any facility for the processing of natural gas including but not limited to natural-gasoline extraction plants, field pressure-maintenance plants, repressuring plants, cycling plants, dehydration plants, or desulfurization plants; the operation of any natural-gas connecting lines from a well-head connection or from a main gas trunk line to or from such plants; and the operation of any stationary gathering systems or surface connections for the conveyance of natural gas to the point of connection with a main gas trunk line.

5. *"Refining"* means the operation of a plant or plants, other than those specified in paragraph (*a*) (4), for the production of finished or unfinished petroleum, including blending plants which blend natural, bright-stocks and long residuum to finished S.A.E. grades.

6. *"Transportation"* means (except in the case of natural gas) the operation of all petroleum terminal and terminal storage facilities and the operation of all pipe lines for the transportation of petroleum from the first valve on the discharge side of the field shipping tank battery where petroleum is first gaged to any refining facility, terminal or terminal storage facility and from any refining facility to any terminal, terminal storage or marketing facility.

7. *"Marketing"* means the operation of all facilities (other than petroleum terminal or terminal storage facilities or marine, rail, pipe-line or truck facilities used to transport petroleum) for distributing or dispensing petroleum (excluding natural gas), including without limitation the operation of service stations, substations, bulk plants, warehouses, wholesale depots, or facilities operated by "consumer accounts."

8. *"Petroleum enterprise"* means any facility used in the production, refining, transportation, or marketing of petroleum.

9. *"Operator"* means any person engaged in operating a petroleum enterprise.

10. *"Supplier"* means any person with whom a contract or purchase order has been placed for delivery of material to the operator or to another supplier.

11. *"Material"* means any commodity, equipment, accessories, parts, assemblies, or products of any kind.

12. Subject to subparagraph (15), *"maintenance"* means the upkeep of an operator's property or equipment in a sound working condition with a minimum expenditure of material.

13. Subject to subparagraph (15), *"repair"* means the restoration of an operator's property or equipment to a sound working condition when such property or equipment has been rendered unsafe or unfit for further service by wear and tear, damage, destruction or failure of parts or similar causes.

14. Subject to subparagraph (15), *"operating supplies"* means any material (other than that used for maintenance or repair) which is essential to and consumed in the operation of a petroleum enterprise and which is generally charged to the operating expense account of an operator: *Provided*, that the term *"operating supplies"* shall not include any of the following:

(i) Material (other than reagents, additives or compounding material) which is physically incorporated in whole or in part into any product of an operator;

(ii) Any material which is to be used as a fuel or lubricant.

(iii) Any nonferrous material which is to be used as packaging supplies.

15. The terms *"maintenance," "repair"* and *operating supplies"* do not include any of the following:

(i) material for the replacement of an item or part thereof where the replacement is carried on the operator's books as a fixed asset;

(ii) material for the improvement of an operator's property or equipment through the replacement of material in the existing installation, unless the property or equipment which is replaced is beyond economic repair or has been rendered unusable by fire or other hazard or natural cause;

(iii) material for additions to or expansion of an operator's property or equipment.

(iv) material which is of a type which could not be carried on the operator's books under "maintenance," "repair," "operating supplies," or the equivalent in the operator's established method of bookkeeping.

16. Subject to subparagraph (17), *"alterations"* means any change in the physical arrangement of any existing facility for the processing of natural gas, including a natural-gasoline-extraction plant, field pressure-maintenance plant, repressuring plant, cycling plant, dehydration plant, desulfurization plant, any existing facility used in refining (other than blending plants), or any existing facility used in transportation which is made for the purpose of increasing the operating efficiency of such facility and which does not involve an expenditure of more than $1,000 for material.

17. The term *"alterations"* does not include any of the following:

(i) material to be used as "maintenance," "repair," or "operating supplies."

(ii) any change in the physical arrangements of an existing facility in which the amount of material necessary to effect a proper alteration would ordinarily involve an expenditure of more than $1,000 or in which an ordinary alteration in the facility has been subdivided for the purpose of making available to an operator the provisions of subparagraph (16).

18. *"Exploratory well"* means any well located not less than 2 miles from any well capable of producing petroleum.

19. *"Pool"* means any underground accumulation of crude petroleum or associated hydrocarbon substances, including but not limited to natural gas, constituting a single and separate reservoir or source of supply within a field, area, or horizon, whether or not presently discovered or developed.

20. *Office supplies* means any material to be used for "maintenance" or "repair" purposes or as "operating supplies" by an operator for the purpose of carrying out home or branch-office services incident to the conduct of a petroleum enterprise.

21. *Automotive equipment* means any specialized material attached to an automobile or truck (but not including automobiles, trucks, motors, parts thereof, tires, or chassis) which material is necessary for containing, dispensing, measuring the movement of, or distributing petroleum and is used for "maintenance" or "repair" purposes or as "operating supplies."

(b) Assignment of preference ratings.

Subject to the terms of this order, the following preference ratings are hereby assigned to deliveries of material to an operator and to his suppliers.

1. A-1-a to deliveries of material, to an operator engaged in the operation of a natural-gasoline-extraction plant, field pressure-maintenance plant, repressuring plant, cycling plant, dehydration plant, desulfurization plant, or to an operator engaged in refining, which material is to be

Tapping the Earth's Storehouse of

WAR POWER

Plans for a two-ocean navy, the world's greatest air force, more and more tank divisions and motorized field equipment for an army of millions of men—all emphasize the need for Oil in enormous gallonage. For without it, not a ship could ply the seas, not a plane could fly, not a tank would roll, not a truck could move.

And without Steel, not a drop of Oil could be produced.

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Republic—world leader in production of electric weld casing, tubing and line pipe, of alloy and stainless steel—has stepped up its steel output many times over former peaks. It has greatly increased its facilities to insure *Production for Victory*—even now is making and planning additional expansion. Every one of its 71,000 men in 65 plants and mines is exerting full-out effort to supply the Steel you need to produce Oil, so vital to our war power.

Get a word and picture demonstration of the exclusive processes used in fabricating Republic Electric Weld Casing, Tubing and Line Pipe and their advantages. Ask for a copy of "The Pipe of Progress," a handsome, informative 44-page bound volume. Do it now.

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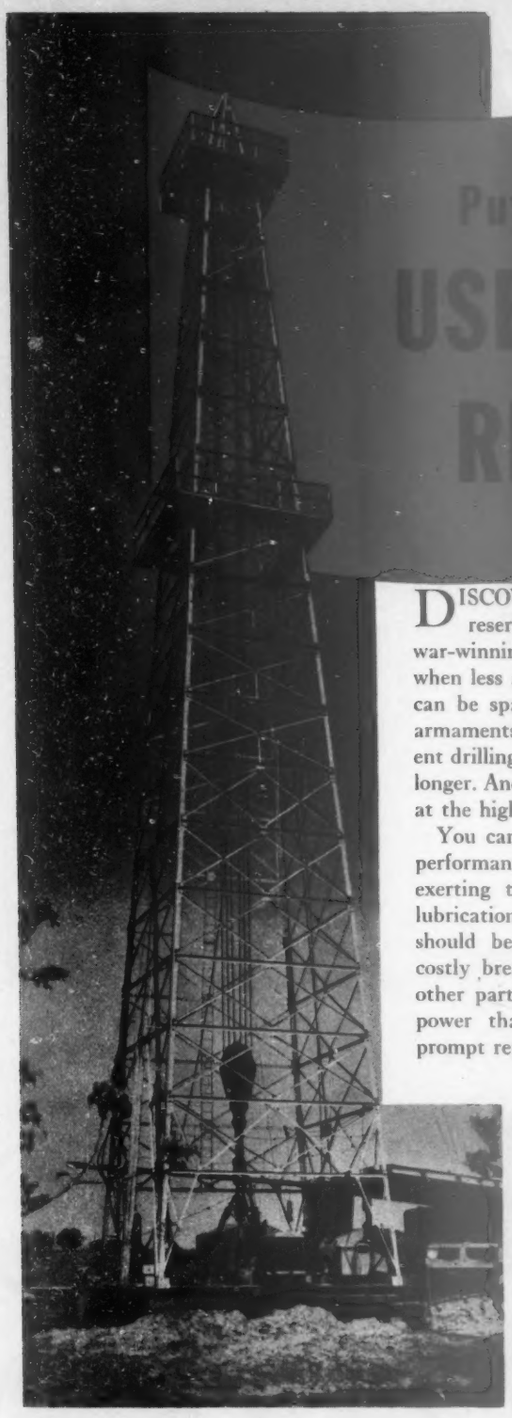
Union Drawn Steel Division • Truscon Steel Company

REPUBLIC *Electric Weld*

LINE PIPE...NORMALIZED CASING AND TUBING

Other products include Sheets and Plates—Upson Bolts, Studs, Nuts and Rivets—Electrunite Heat Exchanger Tubes.



Put new life into your equipment . . .

USE GENUINE "OILWELL" REPLACEMENT PARTS

DISCOVERING and proving vital new reserves and maintaining the flow of war-winning crude are hectic tasks today when less and less steel and other metals can be spared from the manufacture of armaments. You've got to make your present drilling and producing equipment last longer. And, you've got to keep it running at the highest possible efficiency.

You can get longer and more efficient performance out of your equipment by exerting the utmost care in operation, lubrication and inspection. Worn parts should be replaced promptly to avoid costly breakdowns or excessive wear on other parts. Worn parts waste time and power that could easily be saved by prompt replacement.

Every genuine "Oilwell" replacement part is designed to renew the original operating efficiency of the "Oilwell" equipment in which it is used. The engineers who design a machine and follow its performance in the field are obviously best qualified to know what is required of each and every part—what special materials, heat-treatments and tolerances are needed for long life and peak performance.

"Oilwell" is going *all out* in the manufacture and distribution of genuine replacement parts to help you get maximum performance from your "Oilwell" equipment. We've got to win this war, and this is one way we can help. Genuine "Oilwell" replacement parts fit better, last longer, and keep your equipment in fighting trim.

CARE IN OPERATION AND MAINTENANCE and the use of genuine replacement parts will keep a modern power rig running at peak efficiency for years. This complete "Oilwell" rig is giving the kind of service that really saves time and material so vital to our war effort. Only sixteen days total elapsed time (including cementing and moving on and off location) were required to complete this 5221-foot Oklahoma well.

OIL WELL SUPPLY COMPANY

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DIVISION OFFICES—OIL CITY, PA.
DALLAS, TEXAS LOS ANGELES, CALIF.

Branch Stores Serving All Oil Fields
United States Steel Corporation Subsidiary

EXPORT DIVISION OFFICE—
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NEW YORK CITY

used for the repair of the operator's property or equipment where there has been an actual breakdown or suspension of operations and the essential material for effecting the repair is not otherwise available.

2. A-1-c to deliveries of that minimum quantity of material to an operator engaged in the operation of a natural-gasoline-extraction plant, field pressure-maintenance plant, repressuring plant, cycling plant, dehydration plant, desulfurization plant, or to an operator engaged in refining, which material is to be used for maintenance and which is necessary to make reasonable advance provisions for averting an actual breakdown or suspension of operations.

3. A-1-e to deliveries of material, to an operator engaged in production, which material is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown pool or part thereof by means of geological, geophysical or geochemical prospecting, including specialized material attached to an automobile or truck (but not including automobiles, trucks, motors, parts thereof, tires, or chassis) and used for the physical function of carrying out geological, geophysical or geochemical prospecting.

4. A-2 to deliveries of material:

(i) to an operator engaged in production or refining, which material is to be used exclusively for carrying out by means of an existing research laboratory investigations into more efficient or more effective methods of conducting production or refining operations:

(ii) to an operator engaged in production, which material is to be used exclusively for operations directly involved in the search for and discovery of a previously unknown pool by the means of the drilling and completion of an exploratory well, including but not limited to the drilling of "slim holes."

(iii) to an operator engaged in refining, which material is required as operating supplies and consists of one or more of the following: acetone, activated alumina, activated silica gel, aluminum paste, aluminum powder, aluminum chloride, ammonia, carbon tetrachloride, chlorine, copper sulfate, cresylic acid, dichlorethyl ether, diethanol amine, ethylene dichloride, foamite, glycerin, glycol, hydrochloric acid, hydrofluoric acid, mercury, metal deactivator (including orthoarasol), methylbutyl ketone, methylethyl ketone, methyl alcohol, nitrobenzene, phenol, phosphoric acid, potassium bichromate, sodium hypochlorite, toluene, triethanol amine, tripotassium phosphate, trisodium phosphate, and zinc chloride.

(iv) to an operator engaged in the operation of any natural-gasoline-extraction plant, field pressure-maintenance plant, repressuring plant, cycling plant, dehydration plant, or desulfurization plant, which material is required as operating supplies and consists of one or more of the following: acetone, activated alumina, activated silica gel, aluminum paste, aluminum powder, aluminum chloride, ammonia, carbon tetrachloride, chlorine, copper sulfate, diethanol amine, ethylene dichloride, foamite, glycerin, hydrochloric acid, mercury, methyl alcohol, nitrobenzene, phenol phosphoric acid, sodium hypochlorite, triethanol amine, tripotassium phosphate, trisodium phosphate and zinc chloride.

(v) to an operator engaged in transportation, which material is to be used for the repair of the operator's property or equipment where there has been an actual breakdown or suspension of operations and the essential material for effecting the repair is not otherwise available.

5. A-8 to deliveries of material:

(i) to an operator engaged in production, refining or transportation, which material is to be used for the maintenance or repair of the operator's property or equipment, or is to be used in effecting alterations, or is required as operating supplies.

(ii) to an operator engaged in production, which material is to be used for production purposes, but excluding material not otherwise provided for by this order which is to be used by an operator in the operation of any facility for the processing of natural gas.

6. A-10 to deliveries of material:

(i) to an operator engaged in marketing, which material is to be used for the maintenance or repair of the operator's property or equipment or which is required as operating supplies.

(ii) to an operator, which material is to be used as automotive equipment or as office supplies.

(c) Persons entitled to apply preference ratings.

The preference ratings hereby assigned may, in the manner and to the extent hereby authorized, be applied by: (1) any operator; (2) any supplier of material to the delivery of which a preference rating has been applied as provided in paragraph (e).

(d) Restrictions on use of ratings.

1. *Restrictions on operator:*

(i) The operator may not apply a rating to obtain material to the delivery of which any rating is hereby assigned unless such material cannot otherwise be obtained without such rating on the date required to enable such operator to fulfill the authorized purposes for which the rating is granted.

(ii) The operator may not apply a rating to obtain scarce material the use of which may be eliminated without serious loss of efficiency by substitution of less scarce material or by change of design.

(iii) The operator may not apply a rating to obtain material in greater quantities or on earlier dates than required to enable him to fulfill the authorized purposes for which the rating is granted.

(iv) The operator may not apply a rating to obtain material in excess of a minimum practicable inventory of such material. Except as provided in paragrah (d)(2), such minimum practicable inventory shall in no event exceed a 90-day supply of material to be used for the purpose for which the rating may be applied.

(v) The operator may not apply a rating to obtain material for any use which is restricted, prohibited or in any way limited by any order issued by the director of industry operations, other than material to be used in conformity with the provisions of such order.

2. From time to time the director of industry operations may determine that any operator or class of operators is exempt, in whole or in part, from the restrictions contained in paragraph (d)(1)(iv).

3. *Restrictions on suppliers:*

(i) No supplier may apply a rating to obtain material in greater quantities or on earlier dates than required to enable him to make on schedule a delivery rated hereunder or within the limitation of paragraph (d)(3)(ii) and (d)(3)(iii) below, to replace in his inventory material so delivered. He shall not be deemed to require such material if he can make his rated delivery and still retain a minimum practicable working inventory thereof; and if, in making such delivery, he reduces his inventory below such minimum, he may apply the rating only to the extent necessary to restore his inventory to such minimum.

(ii) A supplier who supplies material which he has in whole or in part manufactured, processed, assembled, or otherwise physically changed may not apply a rating to restore his inventory to a practicable working minimum unless he applies the rating before completing the rated delivery which reduces his inventory below such minimum.

(iii) A supplier who supplies material which he has not in whole or in part manufactured, processed, assembled, or otherwise physically changed may defer applications of a rating hereunder to purchase orders or contracts for such material to be placed by him until he can place a purchase order or contract for the minimum quantity procurable on his customary terms; *Provided* that he shall not defer the application of any rating for more than 3 months after he becomes entitled to apply it.

(e) Application of preference ratings.

1. The operator or any supplier, in order to apply a preference rating assigned hereunder to deliveries to him, must endorse on all copies of each purchase order or contract which is covered by a rating assigned hereunder, a statement in the following form, signed manually or as provided in Priorities Regulation No. 7 (944.27) by an official duly authorized for such purpose, specifying the rating assigned:

"Preference Rating ———, is applied hereto under Preference Rating Order No. P-98, with the terms of which order the undersigned is familiar. This rating may be extended only upon the terms of said order.

———————————
Name of operator or supplier

By ———————————
Signature of duly authorized official.

Such endorsement shall constitute a representation to the War Production Board and the supplier or manufacturer with whom the purchase order or contract is placed that such purchase order or contract is duly rated in accordance herewith. Such supplier or manufacturer shall be entitled to rely on such representation, unless he knows or has reason to believe it to be false. Any such purchase order or contract shall be restricted to material the delivery of which is rated in accordance herewith.

2. In addition to the requirements of paragraph (e)(1), the operator (but not a supplier), in order to apply the preference ratings assigned by paragraphs (b)(1), (b)(2), (b)(3), (b)(4)(ii), (b)(4)(iii), (b)(4)(iv) and (b)(4)(v), must communicate with the Office of Petroleum Coordinator, Washington, D. C., Ref. P-98, supplying in detail the following information:

(i) date of actual breakdown or suspension of operations (if applicable);

(ii) the equipment to be repaired and its operating importance (if applicable);

(iii) the material, quantity and price thereof, necessary to effectuate the repair or to initiate or maintain operations;

(iv) the supply of the necessary material which the operator has on hand or available; and

(v) the names and addresses of suppliers from whom the material is to be obtained and the earlier delivery dates assured on (*a*) an A-8 or lower rating, (*b*) an A-2 or higher rating by any such supplier for delivery of the minimum necessary quantity of material.

The director of industry operations will notify the operator whether, and to what extent, the application is approved. A copy of such notification shall be furnished by the operator to any

(Continued on Page 84)

Natural Gas News

Reductions in Natural-Gas Uses Encouraged by WPB Power Unit

WASHINGTON, D. C.—A voluntary conservation program for natural gas, to be supported by utility companies through their advertising and regular consumer contacts, is being undertaken by the power unit of the War Production Board, it was revealed today in a confidential report on the first 3 weeks' operation of L-31, the natural-gas limitation order.

The report, made by J. A. Krug, chief of the power unit, to J. S. Knowlson, WPB director of industry operations, states that a meeting was held with representatives of the natural-gas section of the American Gas Association to discuss plans which this organization now has under way for a national conservation program.

"A large number of the utilities affected by L-31 have already run conservation advertisements in newspapers and developed appropriate bill enclosures to be sent to their consumers," the report states. "In general, the industry has shown willingness to cooperate in wholehearted fashion with the terms and spirit of the order."

Declaring that the restrictions imposed in the order "were not only advisable but absolutely necessary," Mr. Krug asserted that if these restrictions had not been imposed "there would be the most serious interference with war production during the coming winter of 1942-43."

"Numerous utilities which formerly took the position that they had a good margin of surplus capacity now state that they are rapidly approaching the point where curtailment will be necessary," Mr. Krug stated.

Current fuel-oil shortages in various areas of the United States, notably along the Atlantic seaboard and in the Pacific Northwest are interfering with plans to convert from gas to fuel oil in these areas," Mr. Krug pointed out.

"It is recognized," he said in the report, "that because of the threatened shortage of fuel oil in certain of the eastern states a revision in the present program to encourage the installation of oil standby may have to be made."

While no specific integration orders have been issued under L-31, with respect to gas-utility systems, Mr. Krug revealed that studies are under way in the following situations:

1. Consumers Power and Panhandle Eastern in Central Michigan.
2. Natural Gas Pipeline and Panhandle Eastern in northern Illinois.
3. The development of the Rio Vista field by the Pacific Gas & Electric Co. in California.
4. West Michigan Consumers Co. and Michigan Consolidated Gas Co. in western Michigan.

Further studies are under way with respect to the proposed Hope Natural and Tennessee Gas & Transmission Co. projects, he added. These proposals call for the construction of new gas pipe lines from Louisiana to the Appalachian area. However, as these lines would require a large amount of steel pipe, it is not expected that they will be constructed this year.

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Method of Determining Gas In Reservoir Explained

WASHINGTON, D. C., Mar. 16.—Knowledge of the exact amount of gas originally in reservoir petroleum—calculated from samples obtained at the bottom of oil wells through a technique developed by the Bureau of Mines and now widely used by many oil companies—permits more efficient utilization of natural gas in the production of oil and contributes substantially to the wartime resources conservation effort of the nation, according to Dr. R. R. Sayers, director of the bureau.

Since natural gas in many petroleum reservoirs is the source of energy which forces the fluid through porous rocks and to the surface via the well bore, the bureau points out that an analysis of oil and gas at the bottom of the well is far more accurate than an appraisal of gas-oil ratios at the surface only. The bureau's method of accomplishing such a subsurface analysis is to take a bottom sample, bring it to the surface under pressure, and examine it in the laboratory.

This technique enables one to determine the cubic feet of gas originally in the reservoir oil and to estimate the available "lifting" energy of the gas, Dr. Sayer said in transmitting to Secretary of the Interior Harold L. Ickes a technical paper describing the results of the bureau's studies on this subject.

The methods for analyzing physical properties of reservoir oils to aid in solving production and development problems are described in Bureau of Mines Technical Paper 629, "Collecting and Examining Subsurface Samples of Petroleum," by Peter Grandone and Alton B. Cook.

FPC Authority to Fix Rates Upheld by Supreme Court

WASHINGTON, D. C., Mar. 16.—In a decision having far-reaching effects on the powers of regulatory commissions to fix rates and charges of public utilities, the Supreme Court today upheld an order of the Federal Power Commission reducing wholesale rates on natural gas sold in Illinois by Natural Gas Pipeline Co. of America and Texoma Natural Gas Co.

Many issues were involved in the case, chief one being that FPC did not include $8,500,000 going concern value in the rate base. On this ground the seventh circuit court of appeals set aside the order and is now reversed. The supreme court held FPC had given adequate consideration to various items the companies sought to include as going concern value and that the rate order is not confiscatory because it excluded others.

Companies contested rates fixed to yield 6.5 per cent on the established valuation but the court held this a reasonable return considering the facts of the individual business of these companies.

Of more general effect is statement in decision that courts should not set aside rate orders if the regulatory agency has given a fair hearing and made proper findings and the rates set appear to be reasonable, regardless of the method used in determining that rate.

A concurring opinion declared that the decision upsets the practice of court review of utility rate making in effect since 1898, frees regulatory bodies from basing rates on valuation, and permits use of so-called prudent investment theory or other basis of fixing rates which commissions decide are reasonable. For this reason the decision should be of great interest in all public utility circles.

Eastern Kansas Gas Producers Seek Closer Well Spacing

TOPEKA, Kans., Mar. 16.—A committee of eastern Kansas gas producers is to prepare a report for the OPC supporting their appeal for blanket exception to the spacing provisions of Conservation Order M-68. This line of procedure was adopted last week after a meeting here between gas producers in the eastern part of the state with representatives of OPC from Washington and Chicago.

John F. Jones, formerly counsel for the Kansas Corporation Commission and now attorney for the OPC Production and Conservation Divisions at Washington, explained that M-68 was designed to produce the necessary gas and oil with the least possible use of steel.

Frank C. Brewster, a member of the OPC Natural Gas Division staff, said special well-spacing patterns were approved for the shallow Appalachian gas area and implied that similar relief from the 640-acre limitation may be extended to eastern Kansas.

●

Compact Meeting to Receive Report on Crude Reserves

OKLAHOMA CITY, Okla., Mar. 16.—A study of the dependability of United States petroleum resources, drawn by a committee of technical experts from 11 oil states, and the welcoming of a new member state, Kentucky, will highlight the spring meeting of the Interstate Oil Compact Commission, March 27-28, in Little Rock, Ark.

The commission's research and coordinating committee will meet at 1 p.m., March 27, in the Albert Pike Hotel, to complete its survey of petroleum reserves of the individual states, and will report at the general session the next day.

Kentucky, the twelfth state to enter the compact, will be represented at Little Rock for the first time. Last week in Frankfort, Gov. Keen Johnson signed a legislative resolution authorizing Kentucky to join the compact, but he has not yet named the Kentucky representative.

The general session, to which the public is invited, opens at 10 a.m., Saturday, March 28. Friday will be devoted to committee meetings and informal conferences.

Atlantic Reduces Crude Runs In West Texas District

The Atlantic Refining Co. effective March 13 reduced its purchases of crude oil in West Texas and New Mexico to 23 per cent of normal. The Atlantic company was the first to announce pipeline proration in those areas, its original reduction on February 10 being 22.5 per cent. Following are the percentages of purchases for major buyers in West Texas and New Mexico: Sinclair, 75 per cent; Texas, 65 per cent; Humble and Magnolia, 60 per cent; and Gulf, 100 per cent.

ENGINEERING AND OPERATING SECTION

MARCH 19, 1942

New Pipe-Line Laying Methods

By PAUL REED

CERTAIN changes in some of the details of pipe-line construction have been tested sufficiently in recent undertakings to indicate that they may have an influence on future practices. Some of these have been introduced to reduce the cost of laying pipe. Others have been devised to improve the effectiveness of construction operations. Most of these innovations have been observed in the past year on large projects of major companies built by leading pipe-line organizations.

In this article some of the new methods and equipment are described which have been introduced into such operations as right-of-way work and ditching, stringing, welding and laying pipe at road crossings.

In connection with advance work in pipe-line construction, consisting of clearing the right-of-way and ditching, several practices should be mentioned. During the past year there has been a marked increase in the use of tractor shovels which combine in one machine the functions of a shovel, loader, scraper and angle dozer. It proves to be especially useful where it is desirable to dump a load of excavated material at a point above the ground level where the tractor shovel operates. Ditching machines are being moved from one place to another on the job on trailers with low beds, built according to specifications of construction organizations so as to facilitate loading and unloading. The advantages achieved by the use of rooters and rock rooters, as well as some recent experiments carried on with plow-type equipment, were discussed in The Oil and Gas Journal, January 29, 1942, Page 191.

Pipe Rack on Tractor

Stringing of pipe for a major company line traversing mountainous country presented a difficult problem which was finally solved by the contractor through the construction of special tractor equipment. Some sections of this mountain area were so rough that pipe trucks could not come within a mile of the right-of-way. At first tractors were carrying one or two joints at a time from the highway to the right-of-way. This rate was too slow for the requirements of the job. To hasten things, the contractor had a rack made, capable of holding four joints, which was mounted on a frame that can be lowered to within a foot or two of the ground. After loading, the rack is raised to a position directly over the tractor where it is locked in place while the pipe is transported. The rack is raised and lowered by means of a winch line passing through a block at the top of the tractor boom. A bar device holds the boom at the angle which is most satisfactory for this service. Joints of pipe are clamped to the rack to prevent slipping while in transit. Because of the extremely steep grades, it was necessary to have the loaded tractor pulled by another tractor.

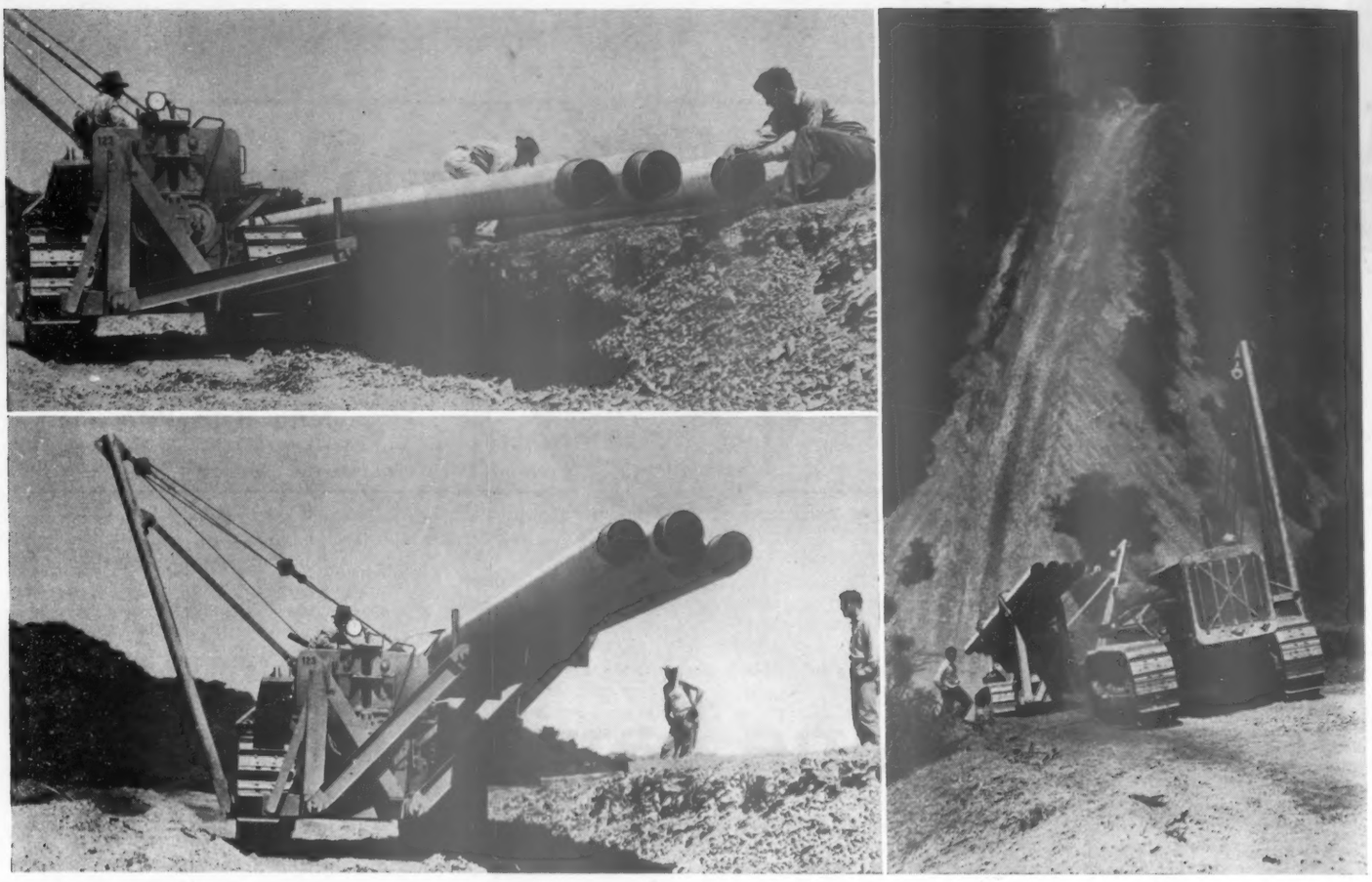
Above: A "lily pad" consisting of a frame with belting is being placed on a skid to support coated and wrapped pipe. Below: Satisfactory results have been obtained by supporting coated and wrapped pipe on a curved steel plate, fitting the under side of the pipe, called a "dishpan" which moves back and forth on the skids with the pipe as it expands and contracts

Some organizations, employing the stovepipe method of welding, have effected a considerable saving by using a device for raising back joints which can be readily made by a welder. In making it, a steel bar is welded to a support for the pipe which has two curved steel prongs; attached to the under side is an angle iron which provides a fulcrum when the bar is manipulated to hold back joints in the position desired during lining up.

Bending Practices

Attention to small details connected with pipe-gang operations may speed up progress by saving seconds in the performance of frequently repeated operations. In the course of a job, these small savings in time may contribute substantially to the reduction of construction costs. It has been found to pay to keep welding clamps in good condition. Welding clamps that have been injured so that they are not easily handled are responsible for unnecessary losses each time they are put on pipe. Some methods for bending pipe are believed to be considerably faster and more satisfactory than those employed a few years ago.

There is still a marked difference of opinion regarding the value of a type of bending shoe which has been widely used in the past year. Such a shoe is permanently installed on the tractor just below the boom; it is usually fabricated and installed in the shops of construction organizations. The shoe swings on a pivot during the bending operation when the joint of pipe to be bent is pulled against the shoe by a winch line. Use of the shoe reduces the amount of maneuvering necessary for the tractor since bending by



Upper left: Loading pipe. Lower left: Rack is being hoisted. Right: A second tractor is needed to pull pipe-carrying tractor over the mountain

this method does not require that the tractor be placed across the pipe or that a bending belt be attached. However, there are some foremen and tractor operators who find that they cannot bend pipe as fast with this type of shoe as they can with the methods they have been accustomed to. During the past construction season it was observed that the contractor who first demonstrated the advantages of this shoe to the industry discontinued using it in approximately the same area where it had previously proved to be successful. This was the result of changing foremen. At the same time, other contractors who had adopted this shoe as the result of his experience were using it with satisfaction in various parts of the country.

Parallel with the trend to solid welding of pipe lines, there has been an increasing use of bolted couplings for certain special purposes. A type of bolted coupling is used for insulating pipe lines passing through areas where trouble from corrosion is anticipated. It is reported that there has been extensive use of bolted couplings for emergency lines for delivering gasoline in connection with military and naval operations in this country and abroad.

The bolted coupling presents advantages because it can be quickly installed by men without previous experience in pipelining. Emergency military pipe lines are usually laid on top of the ground. It has been necessary to point out to some military men, concerned with construction, that the bolted coupling should not be confused with the screw coupling which is now obsolete for pipe-line construction conducted on any scale.

Several improvements in the welding and cutting field have been demonstrating their usefulness. One contractor has developed equipment for controlling pipe-cutting operations. This was done to avoid trouble resulting from chain slippage which frequently has interrupted work when pipe is cut by equipment of the kind which has been widely used. The equipment which he devised substitutes a wide canvas belt for the chain. Turning of a crank, connected with roller equipment of the control device, moves the cutting torch around the pipe at a steady rate. The new machine has proved to be satisfactory in construction of a large-diameter line for a major company.

There has been an increase in the use of home-made turntables for welding flanges to nipples. Several different types are being made by welders in the field where construction is carried on at pump stations and terminals. Most of these turntables utilize salvaged parts from the rear end of a car or truck which make it possible for the welder to put the turntable in the position desired for the work. Turntables for this purpose have also demonstrated their usefulness in welding-shop operations.

A wide belt is used on a cutting machine developed by C. S. Foreman Co., which insures reliable operation

A major company has found that money can be saved by having manifolds for pump stations welded at the company's shop, even though this is several hundred miles away from the points where the manifolds are installed. The accurate fabrication of manifolds can be handled more satisfactorily where modern pipe-line shop facilities are installed than in the field.

Much time and energy can be wasted in the moving of joints and nipples from one part of a job to another. A construction organization devised two types of vehicles called "pipe carts." These run on two salvaged rubber-tired automobile wheels. One provides for carrying pipe suspended by a rope from a yoke which connects the wheels. The yoke and the long draw bar attached to it are made of salvaged pipe. The other type of cart is made so that the pipe is supported on a curved steel plate, mounted on a support welded to the axle connecting the two wheels. These pipe carts can be used either together or separately, according to the demands of the work.

Replacing of tile has become a matter of some concern for pipe-line construction organizations from the Southwest which have been engaged in laying pipe for some of the important projects which have been built through Illinois, Indiana, and Ohio, where farm land is drained by buried tile. Certain organizations which have operated in the area for a number of years make a practice of providing for replacement of tile in the following manner:

A stake, with a large tag attached to it, is placed on top of the excavated dirt to mark where the ditch has crossed a line of tile. This guides the truck driver delivering material for replacing damaged tile. Notations on the tag show how much tile should be unloaded. The tile is usually laid close to the stake. At the same spot, the truck driver also leaves a split piece of steel pipe used for supporting the new tile between the walls of the ditch.

(Continued on Page 37)

Viscosity of Crude-Oil Emulsions

By WM. WOELFLIN
Petroleum Rectifying Co. of California

A.P.I.—Presented at spring meeting of the Pacific Coast district, A.P.I. Division of Production, Los Angeles, Calif., March 10, 1942.

AN EMULSION is a system containing two liquid phases, one of which is dispersed as globules in the other. With the two liquids, oil and brine, two types of emulsion are possible, one in which the oil is dispersed in the brine and the second in which brine is dispersed in the oil. Almost all emulsions encountered in the oil fields are the latter type; that is, emulsions in which brine is dispersed in the oil. Brine is therefore the dispersed, or internal phase, and the oil is the dispersing or external phase. When considering emulsions in this paper it will be of the brine-in-oil type unless otherwise specified.

The viscosity of a liquid is a measure of the internal friction in that liquid; that is, the resistance to shear, agitation or flow. In addition to the viscosity of the dispersing phase, the viscosity of an emulsion is complicated by the presence of the dispersed brine particles in the continuous oil phase.

Recently L. T. Monson* presented the results of experiments to determine the viscosity of brine-in-oil emulsions. At that time Monson in order to express his results, introduced the "viscosity ratio"' which is the ratio of the viscosity of the emulsion at any temperature to the viscosity of the clean oil at the same temperature. The "viscosity ratio" is also used to express results in this paper.

The previous work of Monson consisted of viscosity determinations on brine-in-oil emulsions that were of extremely small particle size. The results reported herein are from determinations on emulsions of both large and small particle size which are more comparable to those emulsions met in practice.

The apparatus that was developed to determine these viscosities consisted of a 2½-in. 60° glass funnel with a stem length of 6 in. The reservoir that held the emulsion contained a paddle for stirring and thereby maintained a uniform mixture flowing through the funnel. An overflow tube was placed in a catch-all below the funnel to drain off excess emulsions. All the tests made with the funnel viscosimeter were made at room temperature. However, the equipment could be surrounded by a water jacket and used in making determinations at elevated temperatures.

The upper vessel was filled with the emulsion to be tested and agitation was started. After the oil had been allowed to reach equilibrium at room temperature the test procedure consisted in allowing the oil to flow through the filling tube and through the funnel. The pinch clamp was adjusted so that the funnel, which was held level, was kept full and slightly overflowing at all times. The efflux time was measured as the time required for 100 ml. of sample to flow through the funnel. The temperature was measured by a thermometer suspended in the funnel chamber. This method of viscosity determination gave reproducible results, efflux times sufficiently large to be accurate, but not so long as to introduce the possibility of temperature variations during the test. There was no uneven flow because of separation of the phases of the emulsion, or no plating out of brine on the inside of the funnel during any of the tests.

For comparison with other work it was necessary to correlate efflux times obtained on the funnel viscosimeter with Saybolt Universal seconds. Several viscosity determinations were carried out by both methods of transformer oil, glycerin and on samples of E-24 (Goose Creek, Texas) dry crude, E-488 (Mount Poso, Calif.) crude and E-619 (Seal Beach, Calif.) dehydrated crude The test data, which are outlined in Table 1,

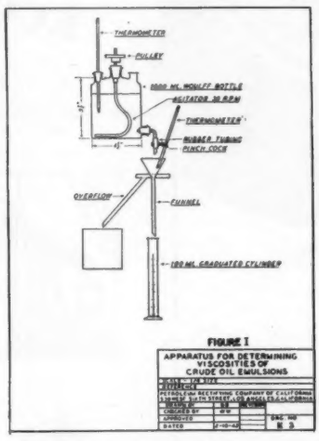


FIGURE I
APPARATUS FOR DETERMINING VISCOSITIES OF CRUDE OIL EMULSIONS

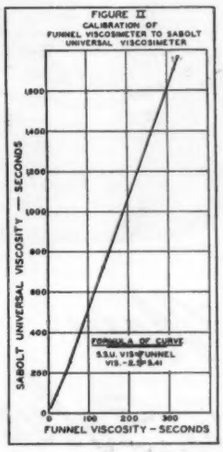


FIGURE II
CALIBRATION OF FUNNEL VISCOSIMETER TO SABOLT UNIVERSAL VISCOSIMETER

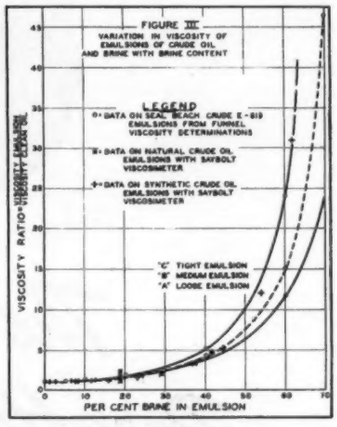


FIGURE III
VARIATION IN VISCOSITY OF EMULSIONS OF CRUDE OIL AND BRINE WITH BRINE CONTENT

*Louis T. Monson, Ind. and Eng. Chem. 30, 1287 (1938).

TABLE 1—CALIBRATION OF FUNNEL VISCOSIMETER

Material—	Viscosity by Saybolt Univ. viscosimeter, seconds	At Temp.	Viscosity by funnel viscosimeter, seconds	At Temp.
E-448 crude, 16.2° A.P.I.	10,135	72	1,877	72
Glycerin	1,740	70	327.5	69.5
E-24 crude, 25.1° A.P.I.	701	70	137	69.5
E-619 crude, 25.1° A.P.I.	255	70.5	50	71
E-619 crude, 25.3° A.P.I.	202	75	38	77.5
Transformer oil	90	70	18.4	70
Water	30.5	70	7	67

TABLE 2—CHARACTERISTICS OF EMULSIONS

Type—	Appearance of cut—
Tight emulsion	All emulsion
Medium emulsion	80% emulsion, 20% brine
Loose emulsion	30% emulsion, 70% brine

TABLE 3—TEST DATA ON LOOSE EMULSION

Per cent brine added	5%	10%	20%	40%	60%
Observed cut on emulsion					
Emulsion per cent	1.4	2.9	10.0	14.0	22.0
Water per cent	3.7	7.7	12.0	26.8	45.6
Total per cent	5.1	10.6	22.0	40.8	67.6
Temperature of test °F.	73.5	73.5	72.5	71	70
Observed funnel viscosity, secs.	53	61	85	201	597
Calculated Saybolt viscosity, secs.	270	314	440	1,070	3,220
Calculated Saybolt viscosity, at 75° F., secs.	261	301	410	915	2610
Viscosity ratio at 75° F., calculated	1.16	1.34	1.82	4.06	11.6

TABLE 4—TEST DATA ON MEDIUM EMULSIONS

Per cent brine added	5%	10%	20%	40%	60%	70%
Observed cut on emulsion						
Emulsion, per cent	5.2	8.4	21.0	37.0	55.0	60.0
Water, per cent	1.2	2.0	2.0	8.0	13.0	15.0
Total	6.4	10.4	23.0	45.0	68.0	75.0
Temperature of test °F.	79.8	79.8	72.5	78.4	75.5	80.2
Observed funnel viscosity, secs.	41.2	46.5	75.5	140	525	1,305
Calculated Saybolt viscosity, secs.	209	239	395	736	2,840	7,060
Calculated Saybolt at 75° F., secs.	323	262	367	830	2,920	9,050
Viscosity ratio at 75° F., calculated	1.19	1.34	1.88	4.25	15.0	46.5

TABLE 5—TEST DATA ON TIGHT EMULSIONS

Per cent brine added	5%	10%	20%	40%	60%	70%
Observed cut on emulsion						
Emulsion, per cent	6.4	12.0	28.0	60.0	92.0	106.0
Water, per cent	....	....	....	....	....	....
Total per cent	6.4	12.0	28.0	60.0	92.0	106.0
Temperature of test °F.	80	82.2	73	77	74.7	....
Observed funnel viscosity, secs.	40	43.5	75	173	880	Inf.
Calculated Saybolt viscosity, secs.	203	222	393	929	4,750	....
Calculated Saybolt viscosity at 75° F., secs.	235	264	372	990	4,690	....
Viscosity ratio at 75° F., calculated	1.20	1.35	1.91	5.07	24.0	....

TABLE 6—VISCOSITIES AT ELEVATED TEMPERATURES

Brine content, per cent	0	10	20	30
Temperature, degrees F.	180	180	180	180
Viscosity S.S.U.	170	210	295	395
Ratio	....	1.23	1.73	2.32
Temperature, degrees F.	140	140	140	140
Viscosity S.S.U.	470	580	825	1,175
Ratio	....	1.23	1.75	2.50

TABLE 7—VISCOSITIES OF NATURAL EMULSIONS

Source—	Kern Front	Round Mt.	Round Mt.
Degree A.P.I. of crude	15.8	14.6	16.3
Brine, per cent	9.0	18.0	20.0
120° F. viscosity ratio	1.22	1.55	1.50
140° F. viscosity ratio	1.22	1.60	1.63
160° F. viscosity ratio	1.23	1.58	1.63

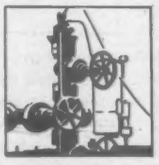
SOLVENT
DETERGENT
SAFE
ECONOMICAL

The New Paraffin Solvent

PARID P-51 is new, but by no means untried. It has been in successful use by many leading producers for some time, and has been effectively removing paraffin from tubing, lead and flow lines at a minimum cost.

Parid P-51 is oil soluble and water dispersible, so may be used either "straight" or as a dispersion in water. The method of application depends on the condition of the well, lead or flow line, and the nature of the deposited paraffin. Ask your supply store for the Parid booklet, containing complete information for use.

FOR PUMPING WELLS
Parid P-51 may be poured into the tubing between the polish rod and the tubing walls, by raising the stuffing box; or Parid P-51 may be introduced in water dispersion without shutting down the well.



FOR FLOWING WELLS
The fluid level is dropped by shutting in the well, a pressure lubricator is connected with the tubing and the solvent is introduced into tubing under pressure.

FOR FLOW LINES
With the line as free of oil as possible, Parid P-51 is lubricated into the lead line at the well head. Gas from the casing is allowed to blow the Parid Solvent along the line, to get proper distribution. After standing for two hours or more, the line is flushed with oil.

P-51
PARID
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when corrected to the same temperature for each series of determinations give a correlation curve for converting funnel viscosity to Saybolt Universal viscosity, which is presented in Fig. 1.

After correcting the observed viscosities to the same temperature by means of the ASTM viscosity-temperature chart, the curve for Saybolt viscosity vs. funnel viscosity is a straight line as shown in Fig. 2 with the formula:

Saybolt viscosity = (funnel vis. — 2.5) × 5.41

The time that elapses between the formation of the emulsion and the determination of its viscosity will effect the results obtained. In general ageing will increase the viscosity, especially of medium and loose emulsions. However, all samples were aged 15 minutes before testing.

Effect of Particle Size

The effect of particle size on the viscosity of an emulsion is larger in the higher range of brine content and tests were made to determine the viscosity of emulsions having loose, medium and tight characteristics. This nomenclature is only qualitative and centrifuge tests were used to determine the approximate particle size rather than photomicrographs. A centrifuge cut was made on each emulsion by mixing 25 ml. of the emulsion with 75 ml. of gasoline-carbondisulphide and centrifuging for 10 minutes at room temperature at a speed of 1,400 r.p.m. The emulsification was controlled in order to give emulsions of approximately the following characteristics by centrifuge.

"Tight" emulsions are those of extremely small particle size, and usually occur when a wet well is flowing with a high gas-oil ratio and is subjected to extreme conditions of agitation. A "loose" emulsion is one which normally occurs in the production from a pumping well in which mechanical equipment is in good condition. A "medium" emulsion is between a "tight" and "loose" emulsion, and may occur under various conditions such as a pump in poor condition or leaky tubing, or gas coming through the tubing with the wet oil.

The effect of the particle size is shown in Fig. 3 together with the effect of the amount of brine.

Effect of Brine Content

Since it was impossible to obtain natural occurring emulsion of varying particle size which also contained a varying per cent of brine, it was necessary to make these emulsions by mixing the oil and brine intimately in a piston type emulsifier. Emulsions were made containing up to 70 per cent of brine. These emulsions were made from a Seal Beach crude with a gravity of 25.1° A.P.I. at 60° F. and brine produced with this crude which had a specific gravity of 1,023 at 68° F. The viscosity characteristics of this crude were:

	Temp. °F.	Time
Viscosity S.S.U. at	70.5	255
Viscosity S.S.U. at	100	127
Viscosity S.S.U. at	199	94
Viscosity, funnel at	71	50

The viscosity determinations on the samples of emulsions prepared as described above are tabulated in Tables 3, 4 and 5.

These data are shown in Fig. 3, which gives the change in the viscosity of the emulsion for variations in brine content. Curve *A* on this sheet is the curve for loose emulsion, curve *B* for medium emulsion and curve *C* for tight emulsion.

The highest brine content in the tight emulsion curve is 60 per cent. A test was attempted with a brine content of 70 per cent, but owing to the extremely high viscosity of the emulsion it would not flow through the viscosimeter and the test was abandoned. It was possible to determine the viscosity of the medium emulsion at 70 per cent which was 46.5 times that of the clean oil. Difficulty was also encountered in trying to determine the viscosity of the loose emulsion with 70 per cent brine content because of stratification of the test sample. In other words, under the condition of the experiment it was not possible to hold 70 per cent brine uniformly dispersed in this emulsion.

There is little difference in the viscosity ratio for brine contents up to 30 per cent. Above this value the curves diverge and the effect of particle size becomes of importance.

Fig. 4 shows a generalized curve of the variation in relative viscosity with increase of brine content. With no brine present the viscosity is that of the clean oil. As the water content increases the viscosity increases gradually to about 40 per cent brine and then rather abruptly to about 70 per cent or 80 per cent. Generally there will be an inversion of phase in this region and the brine will become the external phase. The internal phase will be a brine-in-oil emulsion. In this case a so-called "double" emulsion is formed in which a brine-in-oil emulsion is dispersed as the internal phase to form an oil-in-brine emulsion. When an emulsion of this type flows into a production tank, the brine in the external phase settles rapidly, leaving a normal brine-in-oil emulsion.

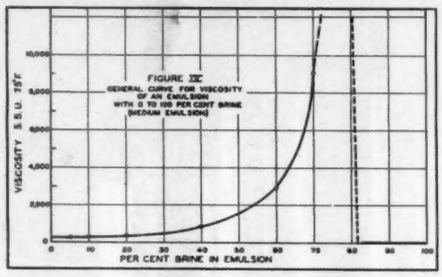


FIGURE IV
GENERAL CURVE FOR VISCOSITY OF AN EMULSION WITH 0 TO 100 PER CENT BRINE (MEDIUM EMULSION)
VISCOSITY S.S.U. 75°F
PER CENT BRINE IN EMULSION

After inversion to the oil-in-brine type of emulsion the viscosity will drop to a point slightly higher than the viscosity of the brine and gradually decrease until we have the viscosity of 100 per cent brine. The point at which inversion from the brine-in-oil to an oil-in-brine emulsion takes place, depends on the character of oil, character of brine, kind and degree of emulsification. In general you may expect to reach this point at 70 to 85 per cent brine content. However, in specific cases you may have an inversion at as low a brine content as 50 per cent and in other cases brine-in-oil emulsions are stable with as much as 95 per cent brine dispersed in 5 per cent oil. When approaching emulsions near the inversion point the viscosity becomes very high and emulsions at this point can be considered as plastic solids, especially if brine is very finely divided or a very tight emulsion. Very few determinations have been made on emulsions containing more than 60 per cent to 70 per cent brine because of the difficulties experienced when working with emulsions with these high brine contents.

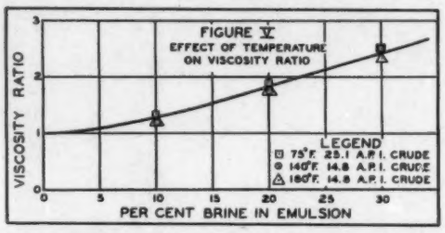
From an inspection of Fig. 4, it is apparent that emulsions should be pumped either with a low brine content as a brine-in-oil emulsion, or with an extremely high brine content as an oil-in-brine emulsion. The disadvantage from a practical standpoint in pumping oil-in-brine emulsions is the large volume of fluid that it is necessary to handle. This, however, is being done in at least one case where a low gravity wet crude is pumped cold through a line by injecting brine in the line with the wet oil to reduce the pressure at the pump.

Effect of Temperature

A few tests were made several years ago using a Saybolt viscosimeter to determine the effect of temperature on the viscosity of a low gravity crude oil emulsion, made from a crude oil with a gravity of 14.8° A.P.I. A low gravity crude was used to eliminate changes in viscosity due to evaporation of some of the light fractions from the crude. The emulsion formed was considered a loose emulsion. The data from these tests are shown in Table 6.

These data are plotted on Fig. 5 together with the viscosity ratio of loose emulsion made from the 25° A.P.I. oil made at 75° F.

Results of tests made at various temperatures on naturally occurring emulsions are given in Table 7. From the ratios given in Fig. 5 and also in Table 6 it is apparent that the viscosity ratio for a given brine content is independent of the temperature.



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New Pipe-Line Laying Methods

(Continued from Page 34)

Although hand labor is largely employed in making road crossings for major pipe lines of the petroleum and natural-gas industries, there has been some use of mechanical equipment for operations of this kind.

In the laying of 26-in. loops to enlarge a natural-gas system serving the Chicago area, one of the contractors bored under highways by means of an engine-driven boring machine.

Boring Machines

A different method was employed in laying pipe under highways and railroads in the congested industrial area of Lake County, Indiana, where an 18-in. crude-oil line and an 8-in. gasoline line were laid in the same ditch in recent months. Both lines were coated with concrete for more than 9 miles. In places, the water table in the sandy soil was less than 2 ft. from the surface. Pipe was pushed through the sand by hydraulic pipe pushers. Sand was removed as the pipe went forward by a spiral device which operated on the auger principle.

Probably the most significant innovations introduced into pipe-line construction within the past year is the use of factory bends in laying the 26-in. loops for the Chicago gas line. This not only made it possible to reduce pipe thickness so as to achieve an important reduction in first cost, but was found to cut the expense of making bends. Since the only covering for the enamel coating of this line under usual field conditions was a wrapping of kraft paper, special measures were taken to protect the coating during the time it rested on skids. Two types of supports were devised. The first type to be designed held the pipe on a short broad sling, made of belting. Later a simpler support was used which consisted merely of a curved steel plate, fitting snugly on the under side of the pipe. This moved with the pipe, back and forth across the skids with expansion and contraction. It appeared to be adequate and it was cheaper to provide. The company laying this line had a survey made by a rechain gang of engineers who preceded backfilling operations. From data collected by them, a profile map of the line was made as a permanent record, showing the location of all important features. Contractors were paid on the basis of this survey.

NIGHT VIEW STANOLIND OIL & GAS COMPANY, SOUTH JENNINGS, LA., PLANT

DESIGNED FOR 2200 LB. ABSORPTION WITH COMPRESSOR DISCHARGE OF 4000 LBS.

Engineered, Designed and Constructed by

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ENGINEERS 713 Second National Bank Building **CONTRACTORS**
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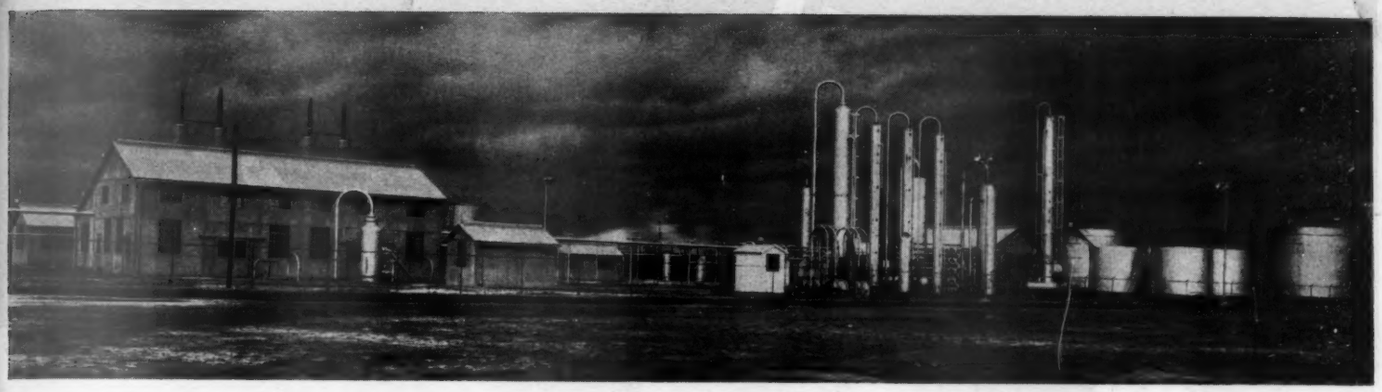


General view showing compressor building at left with absorption and secondary-recovery plant at right

South Jennings Distillate Plant Features High-Pressure Control

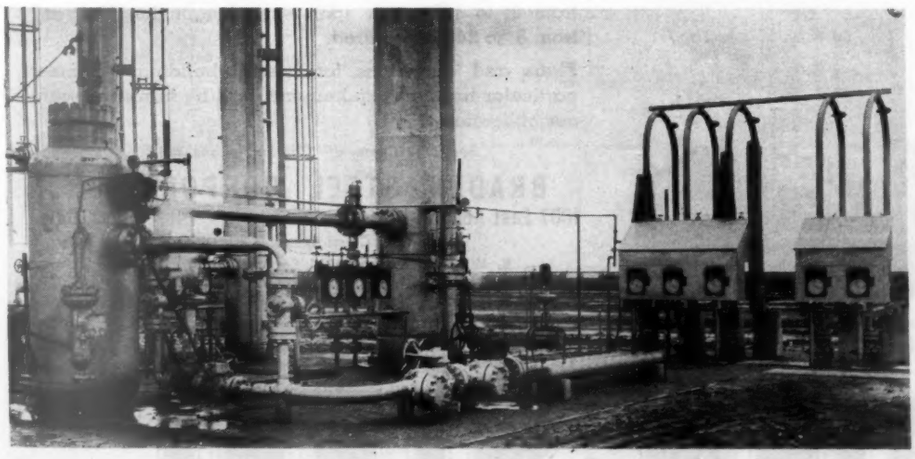
By NEIL WILLIAMS

Control of high pressures and utilization of gas expansion for refrigeration to step up efficiency in distillate recovery are important factors in cycling operations being carried on by Stanolind Oil & Gas Co. in the South Jennings field, Jefferson Davis Parish, Louisiana. Producing sands in this field are at depths of from 8,600 to 9,500 ft., and flowing pressures from 3,200 to 5,200 lb. are being handled. The distillate contains an unusually large proportion of the heavier fractions which complicates its fractionation without going into more elaborate refinery processing than involved in conventional gasoline-plant installation.

DISTILLATE-RECOVERY and gas-cycling operations now under way by Stanolind Oil & Gas Co., in the South Jennings field, Jefferson Davis Parish, Louisiana, involve a number of factors with which most previous projects of this kind have not had to contend to as great an extent. Dealing with abnormally high field pressures, special measures have had to be employed not only to insure effective control of these pressures but also to make possible efficient separation of liquids. Distillate produced in this field contains more of the heavier fractions than usual, making it extra difficult to handle without going into more elaborate refinery processing than is involved in conventional distillate and gasoline-plant installations.

This project, field-wide in its scope, is particularly designed to effect maximum coordination of cycling-plant operation with possible variable field-production conditions. A high degree of flexibility of control provided in the plant permits handling of distillates of various types and adaptation of processing to meet fluctuations in market demand for different finished products. All phases of the undertaking fit into a single, over-all production and conservation program.

Production of the field is obtained from three deep sands, one at 8,600-8,700 ft., the second at 8,800 ft., and the third at 9,500 ft. Gas is being returned only to the shallower horizon, in which pressure is from 3,200 to 3,250 lb. Pressure of the 9,500-ft. sand is above 5,200 lb., as recorded at well head, and is one of the highest pressures yet encountered on the Gulf Coast. This sand is being drawn on at present to supply the additional volume of gas above cycling needs that is required to meet gas sale demand. The 8,800-ft. sand is not producing at present but will be used later to supply gas-sales demand.



Central choke and pressure-control installation. The five high-pressure flow lines at the right discharge to the 3,200-lb. inlet gas manifold, center foreground. At left is the high-pressure inlet scrubber. Tower in center is high-pressure absorber. The metal jackets shown on the flow-line bends are only temporary covering and not plant equipment

Central Choke Control for Wells

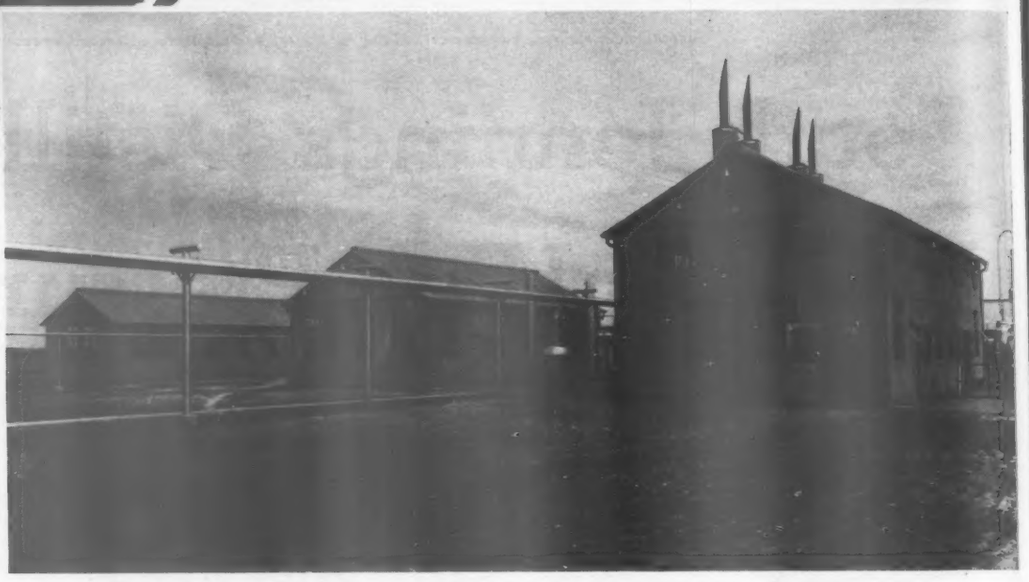
There are three producing wells for the 8,600-ft. sand and two for the 9,500-ft. sand. Separate 4-in. flow lines for each lead directly from the wells to the plant. All production is controlled through a central choke and regulator installation at the plant inlet. Each well is equipped with a double-acting pressure-controlled valve installed on the flow line at the christmas tree which operates to close the well in the event of any increase or decrease in back pressure from fixed limits.* To shut in any producer it is only necessary to close the control on that particular well at the central regulator station. A rupture in a flow line, causing a decrease in the pressure on the line, likewise would automatically shut in the well.

All flow lines discharge into a common header to the plant intake line. Reducing regulators on the 5,200-lb. flow lines from the two 9,500-ft. sand wells ahead of the header effect an initial drop in pressure of this gas to equalize with the 3,200-lb. gas from the 8,600-ft. sand wells. Mixing of the expanded high-pressure gas with the somewhat warmer normal 3,200-lb. gas not only lessens the chance of freezing that might result in expansion of the high-pressure gas but also cools the 3,200-lb. gas.

*The Oil and Gas Journal, June 12, 1941, pp. 36-37.

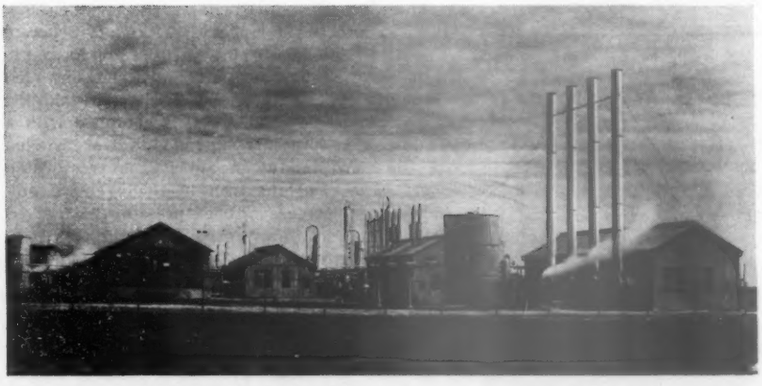
BRADEN
Complete Oil Field Housing

JENNINGS FIELD



Left to Right: Braden Sectional Steel Warehouse, Lean Oil Pump House and Compressor Building.

Stanolind Oil and Gas Company houses its new distillate recovery and pressure maintenance plant in Braden Sectional Steel Buildings. This new plant built by the Gasoline Plant Construction Corporation in the South Jennings Field, Acadia Parish, La., has absorption capacity for handling 60,000,000 cu. ft. of gas daily. Braden Buildings were readily adapted to the unusual plant design and engineering required on this major project.



General view of Stanolind Oil and Gas Company's plant showing seven of the Braden Sectional Steel Buildings.

Braden Steel has again been selected to furnish ALL the steel buildings on a major project in the oil industry.

For more than eighteen years Braden Steel has pioneered and improved the design, fabrication and erection of oil field and industrial steel buildings. Today Braden Standardized Steel Buildings are quickly available in most of the popular types of buildings required in the oil fields. Braden Standard types vary in width from 8′ to 120′ clear span—any length: heights vary from 8′ to 24′ as required.

Plans and quotations for special buildings to meet particular housing requirements, will be furnished without obligation.

See 1942 Composite Catalog, pages 392-3

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BRADEN STEEL

The plant operates at absorption pressures up to 2,200 lb. The necessary drop of the 3,200-lb. gas to the absorption pressure is controlled by a reducing regulator on the intake line just ahead of the high-pressure inlet scrubber. In the successive stages of pressure reduction, temperature of the gas is lowered from upwards of 130° F. at the well heads to approximately 90° F. at the high-pressure absorber. The system was intended to utilize the expansion of gas for refrigeration and thus step up the efficiency in extraction of the distillate content. Bottom-hole temperature of the wells ranges from about 180° F. in the 8,600-ft. wells to 200° F. in the 9,500-ft. wells.

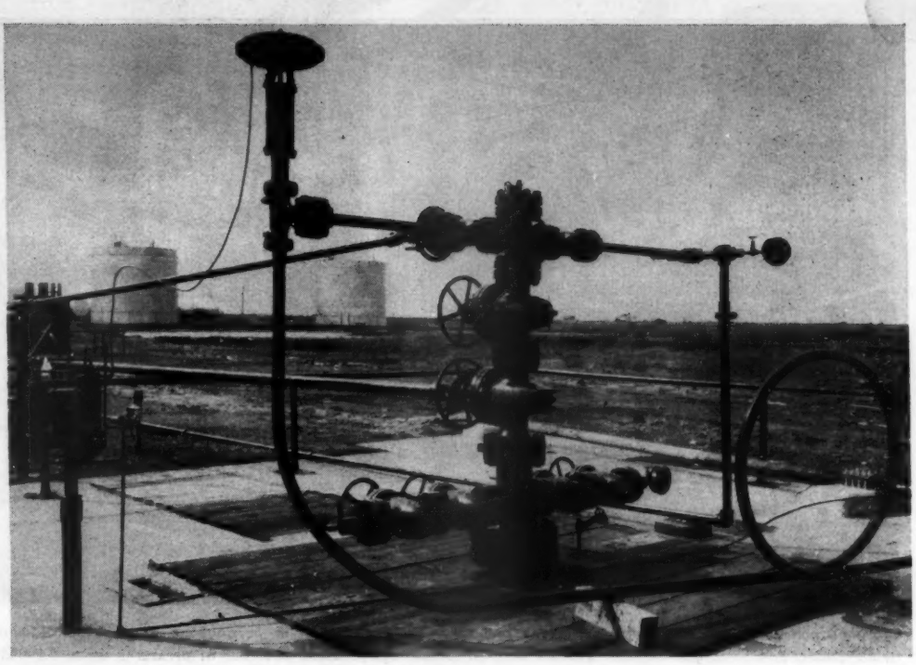
Prior to use, the 5,200-lb. gas lines from the field were tested with water pressure up to 7,100 lb. The 3,200-lb. gas lines were tested up to 4,800 lb. On the downstream side of the choke installation, all lines were tested up to 3,500 lb. All materials carry a safety factor of 4-5.

Initial Separation of Heavier Ends

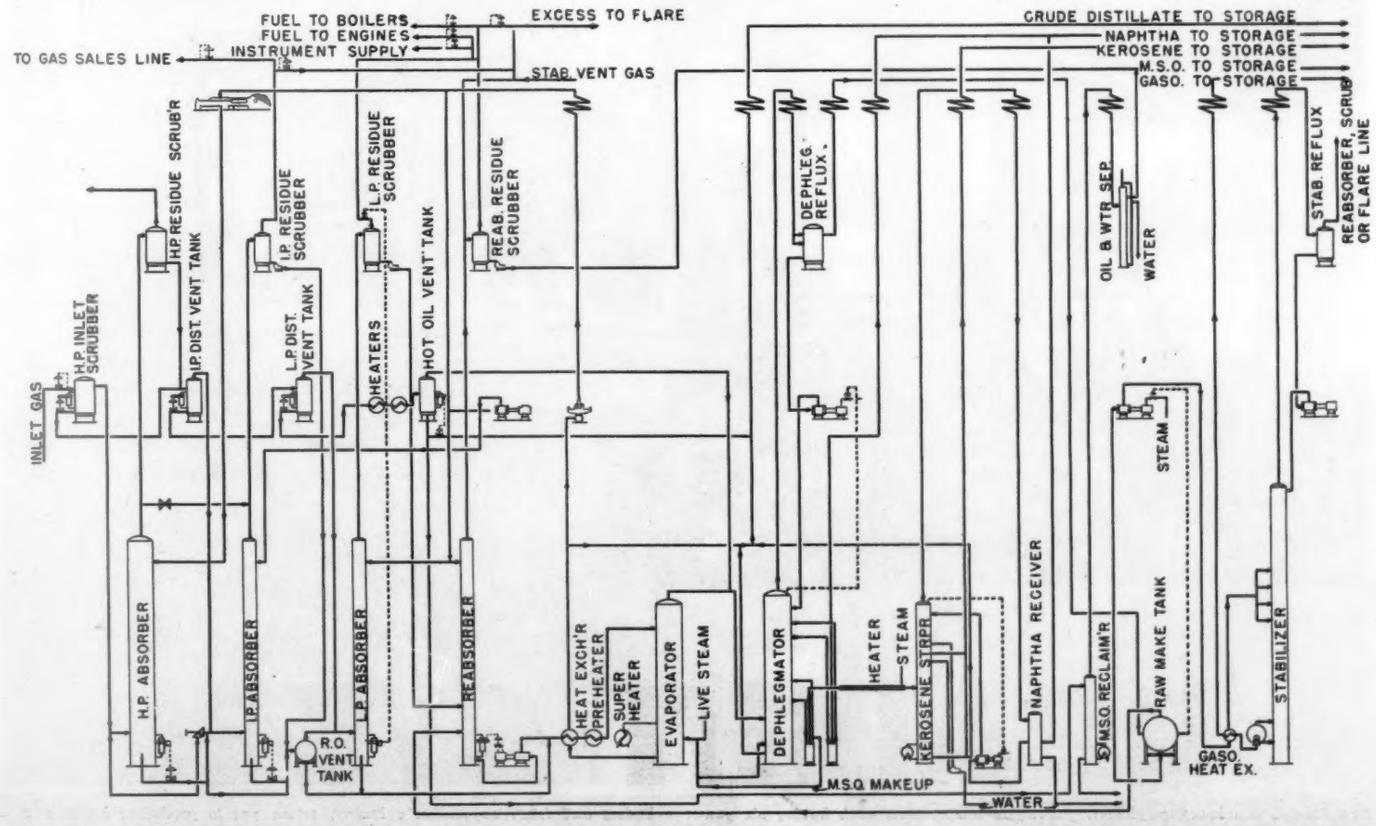
Initial separation of the heavier ends from the gas ahead of absorption is an important phase of plant operation. In this, a substantial cut is taken of crude distillate which can be returned to the system later or run direct to storage. This recovery not only relieves the absorption system of this extra load of liquids, but what is more important it saves in heat exchanger and evaporator duty in separation of these heavy products from the absorption oil, especially since some of these fractions have higher end points than the absorption oil.

Crude distillate recovered in this operation provides the absorption oil needed by the plant. Adequate fractionating equipment to make quality absorption oil is an essential part of the installation. Most suitable for absorption oil is a product comprising an intermediate cut of the heaviest kerosene and lightest gas-oil fractions, representing approxmiately 8 per cent of the total crude distillate recovered in normal operation. Ordinarily, very little of this possible cut is needed as provision has been made for efficient reclamation and reconditioning of the absorption oil in the system.

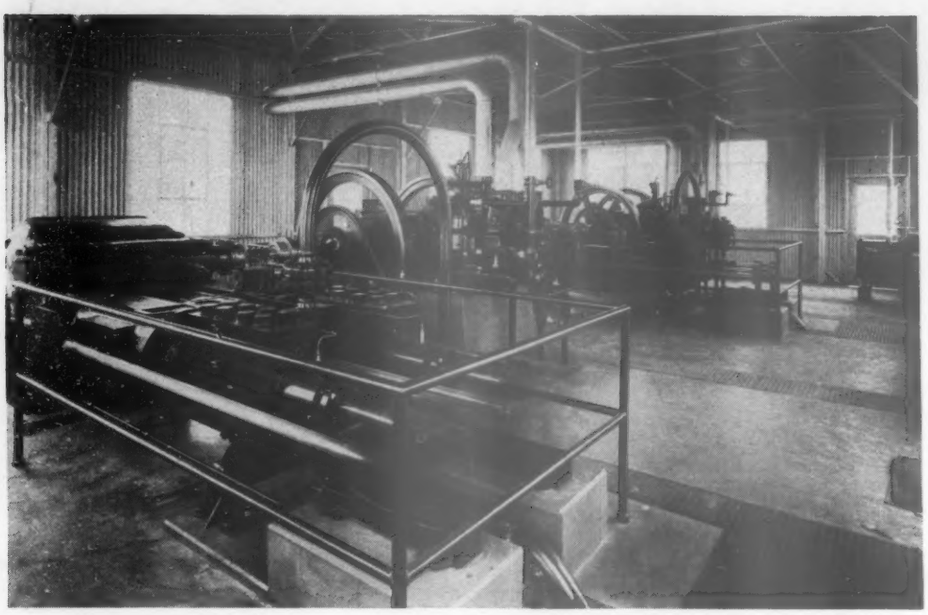
The absorption oil cut is taken as a "slip" stream from the hot-oil vent tank (see flow chart), where the crude distillate, after multiple-stage pressure reduction, receives its primary fractionation. This stream is run directly to the mineral-seal-oil reclaimer unit for final fractionation. This unit is adequate to permit a high degree of selectivity in the characteristics of the



High-pressure gas-condensate well showing automatic valve which operates to close the well in the event of any increase or decrease in back pressure beyond set limits. At left are the pilots which operate the diaphragm-controlled valve on the flow line at the top.



Hydrocarbon-flow diagram, Stanolind Oil & Gas Co.'s distillate-recovery plant, provided by courtesy of M. H. Kotzebue, Gasoline Plant Construction Corp., Houston, Tex.



Two horizontal, duplex, double-acting plunger pumps, each driven through herringbone gears by a 140-hp., twin-cylinder, horizontal gas engine, circulate lean oil to the high-pressure absorber at pressures up to 2,200 lb. One serves as a standby when maximum circulating capacity is not required

recovered oil to meet the requirements of the plant.

Several alternatives or combinations of ways of flowing the crude distillate from the hot-oil vent tank are embraced. With temperature of the crude-distillate stream raised to approximately 400° F. by two steam heaters, the lighter fractions, consisting largely of kerosenes or light gas oil are flashed overhead to the dephlegmator with the distillate fractions stripped from the rich absorption oil in the evaporator. The bottoms, or heavier crude-distillate fractions, can be run either to the dephlegmator, kerosene side stripper, or direct to crude-distillate storage, depending upon the characteristics of the crude-distillate, or the possibilities or need for further fractionation. The "slip" cut for absorption oil make-up is drawn from the stream of heavier crude-distillate fractions. If it is not desired to fractionate any of the lighter crude distillate in the dephlegmator for possible gasoline yield, the overhead line from the hot-oil vent tank can be blocked off, allowing the entire production to be taken through the bottom outlet either direct to the kerosene side stripper or to storage.

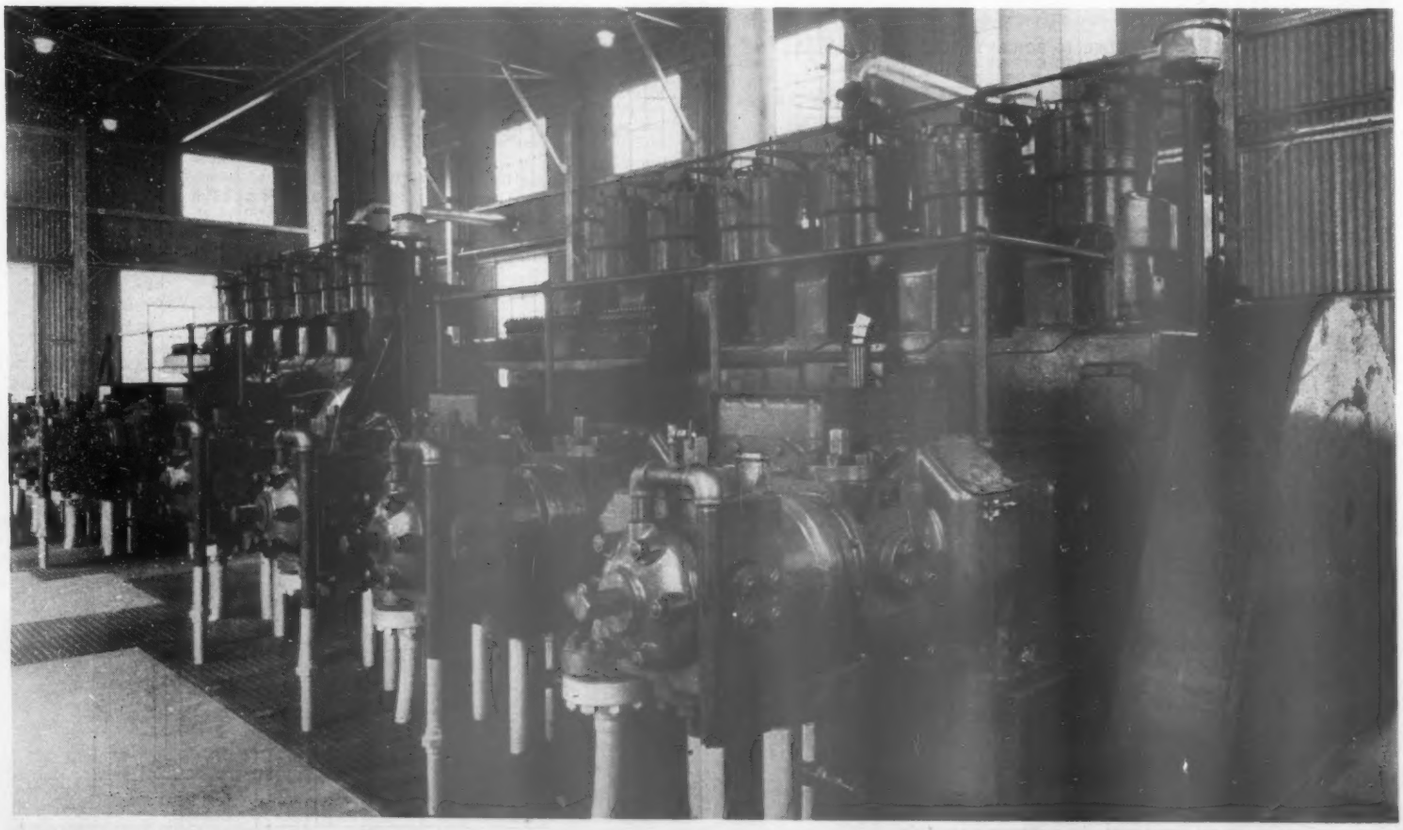
Three stages of absorption, exclusive of reabsorption, insure maximum stripping of the high-pressure wet gas and retention in the absorption system of the light natural-gasoline fractions. These stages involve a high-pressure absorber, operating at pressures up to 2,200 lb.; an intermediate absorber, operating at 800 lb., a low-pressure absorber designed for working pressures up to 200 lb. but operating at variable pressures below that level. A reabsorber, operating at a pressure of 35 to 40 lb. also is provided, and through it the flash from the raw-make tank and the liquid trapped in the low-pressure residue scrubber are handled for final recovery of any desired ends.

Return Gas Balances Withdrawals

Residue gas of the high-pressure absorber goes to the suction of two compressors for return to the 8,600-ft. producing sand. A main function of the intermediate pressure absorber is to supply 800-lb. gas for sale to consumer outlets. Residue from the low-pressure absorbers is used for fuel to boilers and compressor engines.

Sufficient residue gas is returned to the 8,600-8,700-ft. producing sands to balance the withdrawals and maintain reservoir pressures. Additional gas to meet demand of market outlets is made up by withdrawals from the high-pressure 9,500-ft. sand. When total demand for gas for sales exceeds the capacity of the intermediate pressure absorber, a portion of the gas can be diverted from the high-pressure absorber and residue gas to the gas sales line.

The differential in pressure between inlet gas and the operating pressure of the intermediate



Two 600-hp., double-acting-cylinder, gas-engine compressors, each having six power cylinders and four compression cylinders, return gas to producing horizons at a pressure of 3,500 lb.

For continuous trouble-free operation
under exacting operating conditions

The STANOLIND
OIL & GAS COMPANY

Select

HANLON H-W WATERS

Automatic Control Equipment—

Two forged steel bodied H-W Type 15 DRT Pilot Operated back pressure Regulators controlling 3,000 lbs., pressure on field lines to plant. Operated by H-W Type 275 Pressure Pilot Controllers.

For their Distillate Recovery and Pressure Maintenance Plant located in the South Jennings Field, Jefferson Davis Parish — Louisiana, Gulf Coast.

Again HANLON-WATERS Type 850 Displacement Level Controllers are proving their superiority because of NO STUFFING BOX there can be

- **NO LEAKAGE**

and

- **NO FRICTION**

to cause operating difficulties

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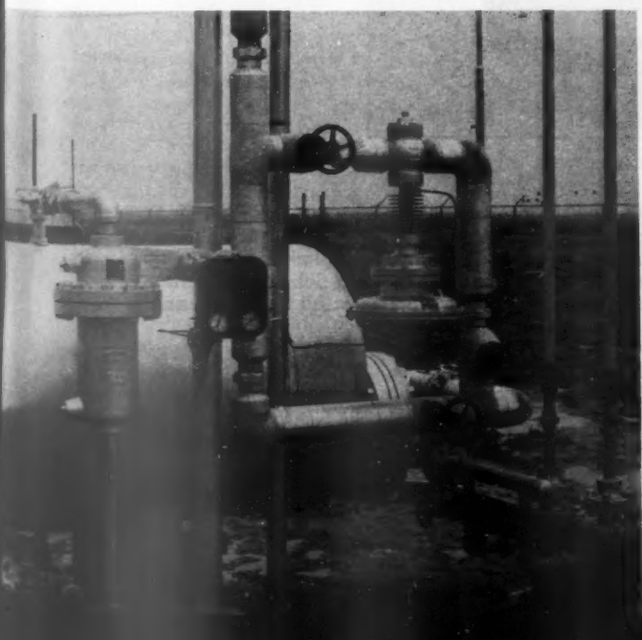
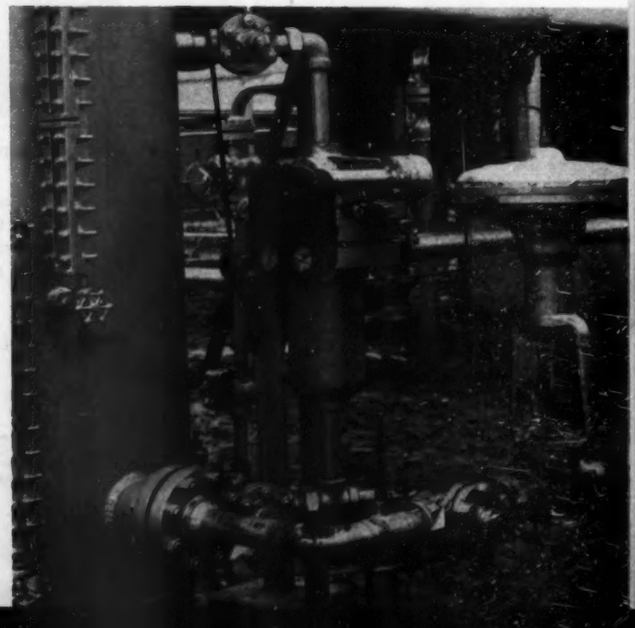
NEW YORK, CHICAGO, PITTSBURGH, PHILADELPHIA, ST. LOUIS, DENVER; SHREVEPORT and LAFAYETTE, LA.; FORT WORTH, HOUSTON, CORPUS CHRISTI, LONGVIEW and ODESSA, TEXAS

Stabilizer Reboiler equipped with H-W Type 850 Displacement Level Controller and H-W Type 97 F Duplex Diaphragm Steam Control Valve. The Type 97 F gives exact temperature control because of construction features such as—NO Stuffing Box to cause friction; compensating action maintaining constant downstream pressure regardless of load variations without valve positioners or reset mechanisms.



To the right, H-W High Pressure Type 850 Displacement Level Controller with H-W Type 86 Motor Valve, maintaining constant level. H-W Motor Valves with the improved roller guided top works and guided inner valve insure trouble-free operation.



absorber is taken care of by a choke on the bypass line which drops the pressure of the stream to the intermediate absorber. Regular practice also is to divert the high-pressure gas direct to the intermediate absorber. This gas joins the rich oil stream from the high-pressure absorber as it passes to the intermediate absorber, in which the expansion of the high-pressure gas is utilized to cool the stream, stepping up absorption efficiency in the intermediate phase. In the exchange of heat with the somewhat warmer oil stream, freezing is prevented that might otherwise occur as the high-pressure gas is reduced.

In operation of the low pressure absorption system it is desired to hold pressure at the minimum that will maintain flow of the rich oil through the remainder of the processing. This permits the maximum flash in the system. For this reason, control of the low-pressure system is variable. If constant pressure were maintained, controls might have to be set as much as 40 lb. above the pressure normally required in order to insure the flow of rich oil under all conditions which, much of the time, would not permit maximum flash.

Variable control is maintained by a liquid-level pilot float on the low-pressure absorber which operates a back-pressure valve on the low-pressure residue gas scrubber. If constant pressure were maintained, use of a motor valve would be necessary. This installation has been eliminated. In this control, pressure of the rich oil vent tank, in which the rich-oil stream from the intermediate pressure absorber is flashed, as well as the low-pressure, crude-distillate vent tank is equalized with that of the low-pressure absorber.

Pressure of the intermediate-pressure absorption system is maintained by a single control, consisting of a back pressure regulator on the intermediate pressure residue gas scrubber. There is no occasion for a back-pressure regulator on the intermediate-pressure, crude-distillate vent tank, which is equalized with that of the intermediate pressure absorber.

Ends flashed in the intermediate and low-pressure crude-distillate vent tanks are passed to the intermediate and low-pressure absorbers, respectively, for absorption and retention in the system of the recoverable fractions.

Pumping facilities for the circulatory absorption-oil system consist of a steam-turbine-driven centrifugal pump which picks up the low-pressure lean oil from the evaporator, circulating it through cooling coils to the low-pressure absorber and the reabsorber; a steam-chest reciprocating pump, which takes suction from the low-pressure system and discharges to the 800-lb. intermediate-pressure absorber, and a horizontal, duplex, double-acting plunger pump with herringbone gear device, driven by a 140-hp. twin-cylinder, horizontal gas engine, which also takes suction from the low-pressure system and discharges to the high-pressure absorber. In each case, duplicate pump installations are provided, one unit serving not only as a standby, but also to be operated jointly with its duplicate to increase the circulation rate when additional capacity is needed. Normally, the circulation rate of lean oil to the high-pressure absorber is approximately 120 gal. per minute.

For return of the residue gas from the high-pressure absorber to the producing horizon there are two 600-hp. angle-type, double-acting-cylinder, gas-engine compressors, each having six power cylinders and four compression cylinders. These operate in parallel in single-stage compression, taking suction at the high-pressure absorber operating pressure and discharging to the header on the gas return lines at a pressure of approximately 3,500 lb.

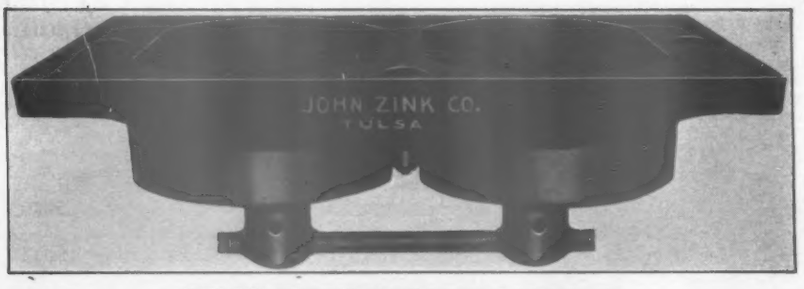
There are two input wells, both in the 8,600-ft. sand. One of these is located in the extreme northwest end of the field, while the other is at the southwest side, about 1¼ miles distant.

Products of the plant now consist of finished motor fuel, representing about 75 per cent of the output; approximately an equal volume each of specification kerosene and distillate; and mineral-seal oil. Originally, it had been planned to make only natural gasolines and distillate. Provision also has been made to take a naphtha cut, either as a direct sidestream from the dephlegmator or from the kerosene stripper overhead, but this is not done regularly when running for maximum motor fuel and kerosene recovery.

The dephlegmator has two sidestream draw-offs, an upper stream for a naphtha cut, and the lower for kerosene. The two streams circulate to outside dehydrators, from which all or any part of either or both streams can be returned to the dephlegmator. This makes possible much of the flexibility that can be attained in the control of products and specifications. When not desiring naphtha, all the upper sidestream is circulated through a steam heater to the kerosene stripper, where the product to be cut is controlled. Naphtha and other light ends separated from the kerosene in the stripper are condensed and accumulated in a receiver, providing a source for naphtha recovery. However, unless wanted, this naphtha is recycled to the top of the stripper as reflux and for further fractionation.

Butanes are not being recovered but it is proposed to install additional facilities for this purpose. With this in view, the stabilizer was designed to serve as the depropanizing column when the debutanizing column is added. While

JOHN ZINK BURNERS



JOHN ZINK VERTICAL BI-MIX SHORT FLAME BURNER

The Vertical Bi-Mix Gas Burner operates on natural refinery or propane gases without adjustments to the burner. These burners are so installed that all air entering the fire box passes through the radiating arm spiders, making an efficient steam generator.

Sixteen of these burners were selected by the Gasoline Plant Construction Corporation to fire the four boilers installed in the Stanolind Oil and Gas Company's distillate recovery and pressure maintenance plant. There is a John Zink Burner to fire every type of oil country boiler at all gas pressures.

—Write for Descriptive Bulletin—

JOHN ZINK COMPANY, Tulsa, Okla.

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now operating at 125-lb. pressure, it was built for 300-lb. working pressure. It now makes either finished motor fuel or naturals.

The plant has a complete tetraethyl lead blending unit so that the finished motor fuel can be blended to meet octane requirements of the market. Tank-wagon loading docks are located at the plant to accommodate local outlets. There also are lines to a railroad loading rack at the town of Jennings, about three miles distant.

Plant power is steam, which is generated by four 125-hp., 300-lb. working pressure, oil-field-type boilers. Although there is an abundant supply of water in the area, the most efficient utilization and conservation of steam is practiced in power and heating. There is an excess of pump exhaust steam, advantage of which is taken wherever possible for heating. An effective condensate recovery system minimizes makeup boiler feed-water requirements.

Exhaust steam is utilized for the initial heating of the crude distillate charged to the hot-oil vent tank, raising the temperature of the cold inlet stream to 250° F. This minimizes the duty of the live-steam heater which boosts the temperature of the stream to the 400° F. necessary for discharge to the hot-oil vent tank. The exhaust steam, after utilization in the crude distillate preheater, is superheated with live steam and reused in the evaporator to aid in stripping the rich oil of its absorbed distillate fractions. Live steam is used in the evaporator preheater, the stabilizer reboiler, the kerosene-stripper reboiler and the mineral seal-oil reclaimer. The superheated exhaust steam utilized in the evaporator is reclaimed as condensate from the two outside dehydrators of the dephlegmator, from the kerosene stripper and naphtha reclaimer water draw-offs, and returned through the low pressure condensate recovery system to the boiler-feed water. The utilized live steam is returned to the boiler feed-water accumulator through a high pressure condensate-recovery system.

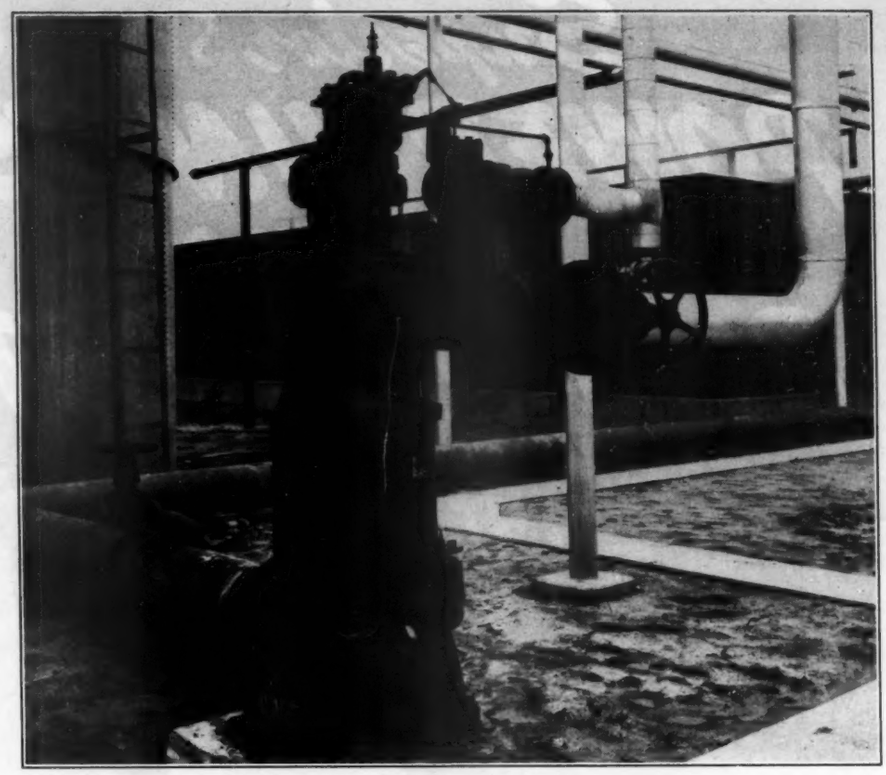
Deep Wells Furnish Water

An abundance of cold, deep-well water simplifies cooling and condensing operations. The water comes from the wells at a temperature of approximately 70° F. and is flowed continuously over the atmospheric cooling and condensing sections over the coil pit. The coil pit has a redwood fence to prevent spray loss. Sections for products and jacket water not requiring low temperatures are sprayed with warm water circulated from the base of the sump by a steam turbine-driven centrifugal pump.

Jacket water for the engines and compressor cylinders is cooled in a closed system. The hot water from the jackets is discharged to individual hot surge tanks for each engine, from where pumps take suction, circulating the water through atmospheric cooling sections in the cooling tower, and thence through headers back to the compressor and power cylinders.

Steam reciprocating pumps are provided for all product processing. Steam-turbine-driven centrifugal pumps are utilized for low pressure lean oil and water circulation. Automatic control applications are made wherever such labor saving devices might enhance the efficiency of the plant. Through this, instrumentation of the plant has been effeceively streamlined. The plant also has been adequately supplied with safety signals or alarms as well as devices controlled from convenient switches for shutting down the plant automatically in event of emergencies. Electric power needs are confined to lighting, instrument control and other minor uses. Power is supplied by a small generator, driven by a steam turbine with a gasoline motor-driven generator as a standby.

The plant was designed and constructed by Gasoline Plant Construction Corp. of Houston Tex.



WATER

For Stanolind's New Recovery Plant

Typical with recovery and refinery plants throughout the country, Stanolind's new plant at Jennings, Louisiana uses water from Layne Wells and Pumps. Shown above is the 100 horse power steam turbine driven Layne pump which has a daily capacity of 1,680,000 gallons.

The installation of Layne Wells and Pumps is always a wise move. In efficiency, long life and economical upkeep, Layne wells and pumps are world famous. Engineers throughout the oil industry refer to Layne Wells and Pumps as "the standards of comparison." Advanced engineering features, rugged construction and finest quality materials make Layne Well Water Systems and Pumps the safest investment. They give years and years of highly satisfactory service and seldom require repairs.

Layne has the facilities for handling well water developing projects of any size. Illustrated literature gives complete details. Address

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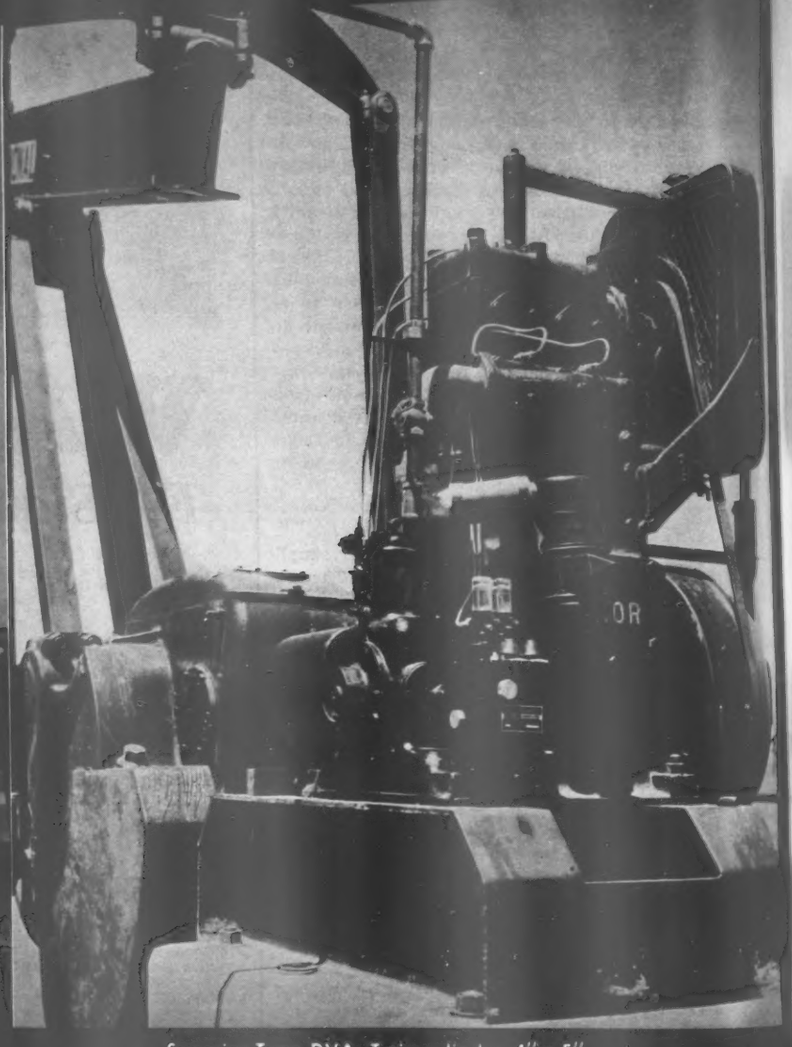
WORLD'S LARGEST WATER DEVELOPERS

Superior SELF-CONTAINED *POWER UNITS FOR* OUTDOOR *PUMPING SERVICE*

Type EA, Two-cycle Twin, 5" x 6" in the East Cromwell Field, Oklahoma



Superior Type DVA, Twin cylinder, 4" x 5" Gas Engine on a Texas Lease

THE NATIONAL

DOMESTIC — Executive Offices: Pittsburgh, Penna. • General Sales Office: Toledo, Ohio
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TYPES EA AND DVA

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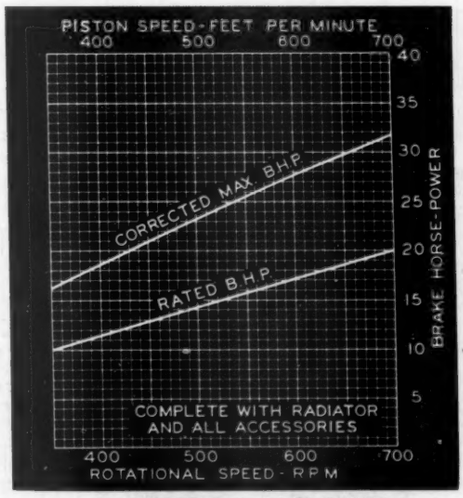
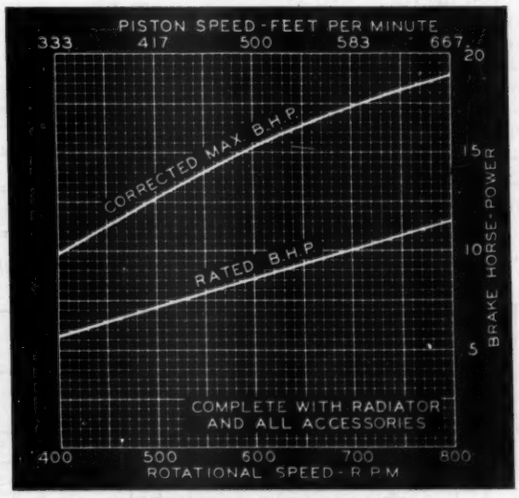
In hundreds of installations, their faithful performance and low operating and maintenance expense have proven their ability to reduce the power fraction of lifting costs to a minimum.



HORSEPOWER RATING CHART
TYPE EA ENGINE



HORSEPOWER RATING CHART
TYPE DVA

Note particularly the conservative H. P. rating of these engines with the surplus power available for sudden overload or emergency.

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Influence of Alloy Additions On Corrosion Resistance

By C. L. CLARK
Timken Roller Bearing Co.

This is the sixth of a series of articles by the author*

WHILE it is possible, on the basis of laboratory tests, to evaluate many of the necessary characteristics of steels for high-temperature service, the corrosion resistance in hot petroleum products can only be ascertained in actual commercial installations, either by strip specimen or by periodic inspection of the tubes themselves.

It is generally recognized that the corrosion resistance in hot petroleum products increases with the chromium content but only recently has work been done to shed additional light on this exact relationship, especially for chromium contents in excess of 5.0 per cent. The corrosive conditions vary considerably in the different refineries and consequently agreement is not to be expected in the actual weight losses obtained. If, however, the results are expressed in terms of their ratio to a given steel, then good agreement may be obtained as shown in Fig. 1.

Resistance of Chromium

This figure gives the results obtained on A.P.I. strip corrosion specimens in three different refineries. The corrosive conditions were entirely different and yet when the results are expressed as a ratio to *DM*, the lowest alloy steel common to these three refineries, a rather definite relationship exists between chromium content and corrosion resistance. These results indicate chromium content to be the controlling factor in so far as corrosion resistance is concerned although silicon and aluminum do have a beneficial influence in certain cases.

On the basis of the results of Fig. 1, an increase in the chromium content from 2.0 to 4.0 per cent doubles the corrosion resistance. Likewise, a 7.0 per cent chromium steel is about twice as resistant as a 5.0 per cent chromium steel, and a 9.0 per cent steel is twice as resistant as a 7.0 per cent steel. The beneficial effect of increased chromium content is thus evident.

That increased silicon content, as well as the addition of aluminum, is beneficial in improving the corrosion resistance, especially of lower alloyed steel, is apparent from Fig. 2. These results show that when the silicon content plus twice the aluminum content is equal to 2.0 per cent the corrosion is only half of that of a normal silicon steel with the same chromium content. These results were again obtained from A.P.I. strip specimens, on steels containing about 1.5 per cent chromium.

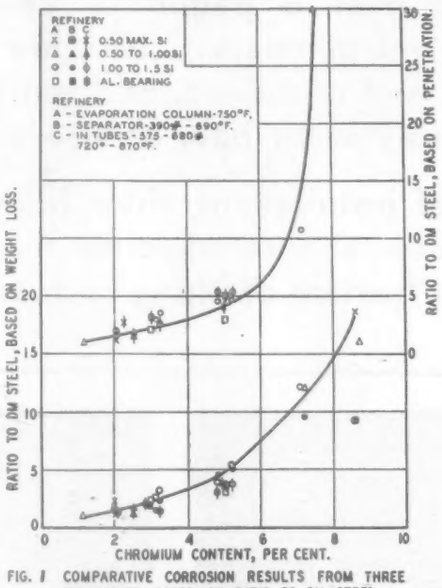

REFINERY
A B C
X ● X 0.50 MAX. Si
Δ ▲ Δ 0.50 TO 1.00 Si
○ ● ◇ 1.00 TO 1.5 Si
□ ■ ◨ AL. BEARING
REFINERY
A - EVAPORATION COLUMN-750°F.
B - SEPARATOR-390# - 690°F.
C - IN TUBES - 375 - 680#
720° - 870°F.
RATIO TO DM STEEL, BASED ON WEIGHT LOSS.
RATIO TO DM STEEL, BASED ON PENETRATION.
CHROMIUM CONTENT, PER CENT.

FIG. 1 COMPARATIVE CORROSION RESULTS FROM THREE REFINERIES, BASED ON RATIO TO DM STEEL.

Influence of Variation of Chromium

The data of Fig. 3 were obtained from actual cracking-tube installations. The upper curve of this figure shows the influence of variations in the chromium content and it is to be observed that, as in the case of the A.P.I. strip specimens, the 7.0 per cent chromium steel is twice as resistant as the 4.0 per cent, and the 9.0 per cent chromium steel has only half the corrosion loss of the 7.0 per cent steel.

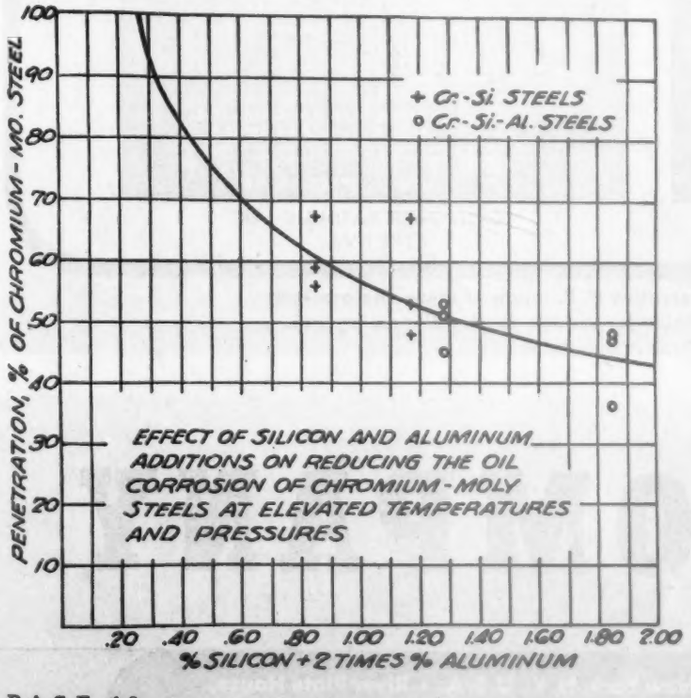
The lower curve of this figure shows the benefits to be derived by a nominal increase in the silicon content and by the addition of aluminum. It is interesting to note that the corrosion resistance of Alcrosil 5 is twice that of the standard 5 Cr Mo steel and comparable to that of the 7 per cent chromium steel. A comparison of the two curves of this figure would indicate an increase in the silicon content by about 0.50 per cent has

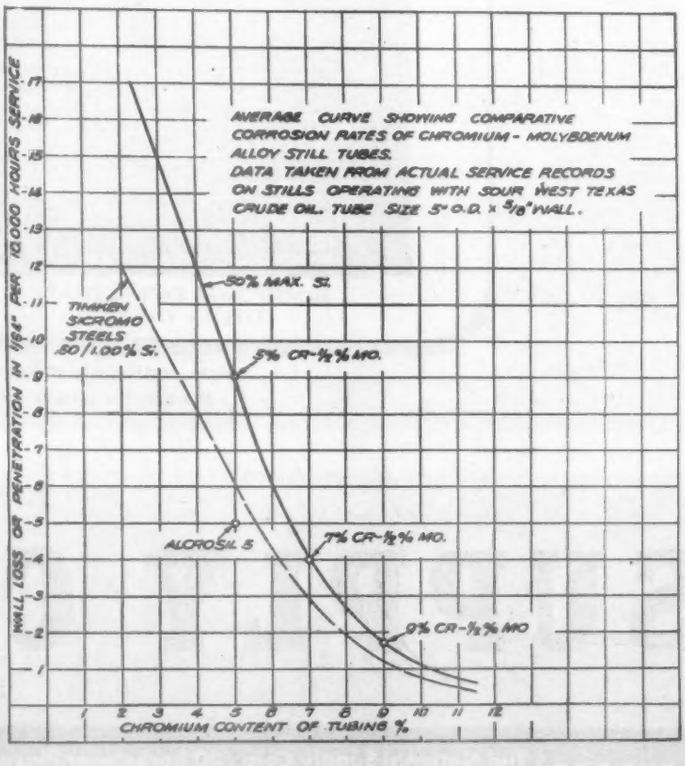
(Continued on Page 50)

*Author's title—"Influence of Alloy Additions on the Corrosion Resistance in Hot Petroleum Products."

Fig. 2 (Below)

Fig. 3 (Right)


+ Cr-Si. STEELS
○ Cr-Si.-Al. STEELS
EFFECT OF SILICON AND ALUMINUM ADDITIONS ON REDUCING THE OIL CORROSION OF CHROMIUM-MOLY STEELS AT ELEVATED TEMPERATURES AND PRESSURES
PENETRATION, % OF CHROMIUM-MO. STEEL
% SILICON + 2 TIMES % ALUMINUM


AVERAGE CURVE SHOWING COMPARATIVE CORROSION RATES OF CHROMIUM-MOLYBDENUM ALLOY STILL TUBES.
DATA TAKEN FROM ACTUAL SERVICE RECORDS ON STILLS OPERATING WITH SOUR WEST TEXAS CRUDE OIL. TUBE SIZE 5" O.D. x 5/8" WALL.
TIMKEN 3 CROMO STEELS .50/1.00% Si.
.50% MAX. Si.
5% Cr-½% Mo.
ALCROSIL 5
7% Cr-½% Mo.
9% Cr-½% Mo
WALL LOSS OR PENETRATION IN 1/64" PER 10,000 HOURS SERVICE
CHROMIUM CONTENT OF TUBING %

Thermal Logging of Producing Oil Wells

By CLARENCE R. DALE
Subsurface Engineer, Technical Oil Tool Corp., Ltd.
Los Angeles, Calif.

TEMPERATURE phenomena observed in oil wells have been studied by a number of investigators for several years. In 1920 a paper dealing with geothermal data was published in U. S. Geological Survey Bulletin 701.[1] The systematic application of temperature studies to the solution of problems in producing wells is, however, a comparatively new practice. In the past 3 years the published results of the use of interpretations of temperature anomalies in locating the source of water, gas, and oil production, determining the migration of fluids from one zone to another and locating casing leaks have considerably increased interest in this work.[2,3]

It is well known that subsurface temperatures increase with depth. The geothermal gradient varies in different areas, and, in fact, may vary in different parts of the same structure. Also there is evidence to show that the geothermal gradient may not remain constant throughout the producing life of a field.

The normal geothermal gradient of a producing well is subject to change from a variety of conditions which may exist at points in the well. The anomalies recorded in a thermal log are indicative of these conditions. An interpretation of the log in the light of all other available information concerning the well shows the nature of the conditions and suggests the remedy or manner of taking advantage of them.

Recording Thermal Instruments

A number of different temperature-recording instruments have been developed for use in oil wells. In general they are of two types: those which record the temperature at successive stations, the instrument being held stationary in the well during recording, and those which produce a continuous record while the instrument is being lowered or raised at a constant controlled speed.

The type of thermometer or thermal element employed differs to a considerable extent, depending upon the method of recording and the other design features of the instrument. The principal requirements of the thermal element are that it be sensitive enough to record differential temperature of at least 0.2° F. and have a very low thermal lag. Accuracy as to actual temperature should be within 1° F. Minimum thermal lag is especially important in the continuous-recording type of instrument.

A continuous-recording thermal instrument which has been used in logging more than 150 wells in the past 2 years is entirely self-contained, that is, the record is made within the instrument on special high-temperature 16 mm. photographic film which is later developed and projected to a greatly enlarged scale for plotting. The thermal element is a bimetal helical coil which tends to wind or unwind as the temperature increases or decreases. This action results in the lengthening or shortening of a beam of light falling upon the film, the length of the beam indicating the temperature recorded. The thermal lag of this type of thermal element is low enough so that the instrument can be run at a speed of 2,000 ft. per hour.

The instrument is run on a piano wire measuring line of the sort used for running various other instruments. The timing of the instrument mechanism is synchronized with the running speed so that the record can be correctly correlated as to depth when being plotted.

Plotting of the film record is done by means of a special projection device which enlarges the images about 40 times. The film and chart paper are driven through the projector under controlled conditions so that the record taken in 1 minute in the well is reproduced on 1 in. of the chart paper. This results in a graph on a scale of 25 ft. to the inch when the instrument is run in the well at a speed of 25 ft. per minute.

***A.P.I.*—Presented at spring meeting of the Pacific Coast district, A.P.I. Division of Production, Los Angeles, Calif., March 10, 1942.**

Interpretation of Thermal Records

Records of temperature anomalies are useful to the engineer only when they are correctly interpreted. The correct interpretation produces a thermal log which can be employed as an aid in solving production problems. Several factors are of great importance and should be noted here.

Each well must be considered as an individual problem, and all other information pertaining to it should be correlated with the temperature record in making interpretations.

Well conditions under which the temperature record is taken are often as important as the accuracy of the recording instrument. Careful control of the well conditions must be exercised in order that the anomalies may be localized and developed in sufficient magnitude.

Where it is known, the normal geothermal gradient for the field can often be used as a basis for making an interpretation of the anomalies observed in the record. However, due to the variations in geothermal gradient that may occur in various parts of the structure or during the producing life of the field it may be necessary to make two traverses, one while the well is flowing and a second after the well has been shut in for a period of 24 hours. This practice has produced excellent results in locating the source of water, gas, and oil production, and in tracing the migration of fluids between zones.

Application of Thermal Logs

Determining Point of Gas Entry.

Fig. 1 is a chart of two traverses made in a well to determine the point of gas entry. Run No. 1 is the flowing traverse made while the well was producing 190 bbl. of oil and the gas-oil ratio was 9,500 cu. ft. per barrel. After the flowing traverse was made the well was shut in for approximately 24 hours. The shut-in traverse, Run No. 2, was then made. The flowing traverse shows a definite change of gradient from 4,880 to 5,070 ft., but from this single run it would be rather difficult to make an interpretation. Run No. 2 shows the anomaly very definitely. While the well was producing, the expanding gas coming from this area had cooled the formation. When the well was shut in there was a continuous transfer of heat from the fluid column into the formation in the area indicated by the temperature anomaly on the shut-in run. A pressure traverse made while the well was flowing indicated gradient changes that conformed to the thermal log.

The time required for a sand that has been producing free gas to become in thermal equilibrium with the adjacent formations has not been determined. Temperature anomalies have been secured opposite the area that had produced free gas in wells which had been shut in for 48 hours before making the shut-in traverse.

Pressure traverses aid in checking the interpretations of thermal logs and should be made immediately after the temperature runs. Fig. 2 shows a well with three zones, with the tubing hung at the top of the second zone. A bridge plug is set in a cemented blank section between Zones 2 and 3. Zone 3 was known to have a higher pressure than Zones 1 and 2. On the flowing traverse the production was 228 bbl. with a gas-oil ratio of approximately 5,000 cu. ft. per barrel. Run No. 1, made while the well was flowing, indicates the movement of fluid down from Zone 1 to the bottom of the tubing. The temperature anomaly at the bridge plug on both the flowing and shut-in runs is the result of gas bypassing the plug from

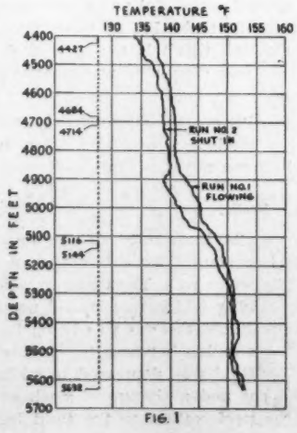


FIG. 1

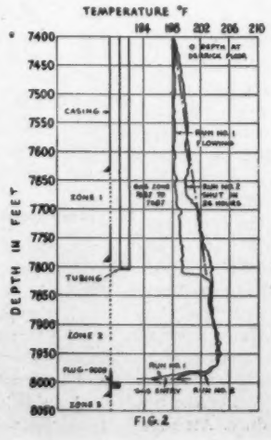


FIG. 2

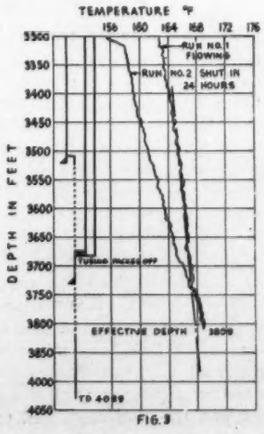


FIG. 3

Zone 3. During the time the well was producing, the upper part of Zone 1 was cooled by the expanding gas, resulting in the temperature anomaly through this area on the shut-in run. The temperature of the fluid opposite Zone 2 on both runs is the same because no production was coming from this zone. A flowing pressure traverse indicated a water gradient from the bottom of the tubing to the bridge plug.

In order to secure a temperature anomaly from gas entering a well on a flowing run where the tubing extends below the producing area it is necessary to produce the well between the tubing and the casing. The same temperature anomalies that occur outside the tubing will then be observed in the static fluid in the tubing.

Establishing Point of Production.

The thermal log reproduced as Fig. 3 shows that the well is producing from the top few feet of a perforated interval. The flowing gradient to the point where the curves diverge is 0.8° F. per 100 ft. while the shut-in gradient is 2.3° F. per 100 ft., which is the slant of the geothermal gradient for the field. If the production had been coming from lower in the perforations the divergence of the curves would have been from the lowest point that production was entering the well. Where there are several perforated intervals in a well the divergence of the two curves will indicate the lowest interval that is producing.

Tracing Migration of Fluid.

During the life of a field where wells take in two or more zones there is apt to be considerable migration of fluids from one zone to another due to uneven withdrawals. In Fig. 4 the tubing is

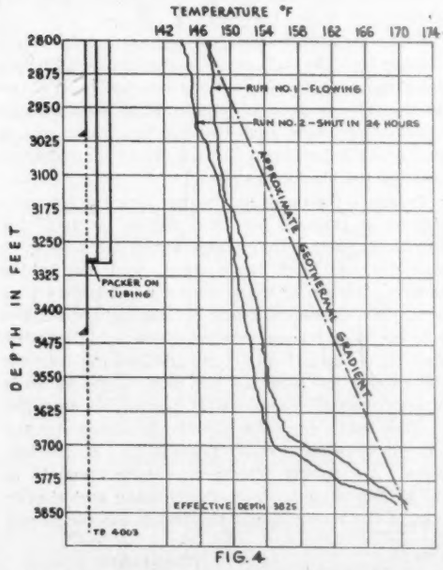


FIG. 4

packed off between two zones. These two zones produce oil of different gravity. Normally producing through the tubing from the lower zone, the well started to make oil from the upper zone. The temperature traverses were made to determine the condition of the well. Both the flowing and shut-in temperature curves are considerably below the geothermal gradient. Normally, the shut-in gradient should approach the geothermal gradient, but the reverse condition exists. The results indicated a migration of gas and oil from the upper zone to the lower part of the second zone with no evidence that the packer had failed. The lower temperatures on the shut-in run suggests that more fluid was migrating downward while the well was shut in than while the well was flowing. A plug was run to the bottom of the tubing and the well continued to produce. Attempts were made to set the slips on the plug between 3,100 ft. and the bottom of the tubing, but the volume of fluid moving downward prevented the slips from taking hold. At 3,100 ft. it was possible to set the plug, which indicated the hole in the tubing was at 3,100 ft. A short sleeve was placed in the tubing at this point and the well was returned to production. A change in the gravity of the oil to that of the lower zone showed that the repairs were successful.

Locating Holes in Casing.

A method of locating holes in casing that has proved successful is shown by the results of a single traverse made in a well, Fig. 5. In this well

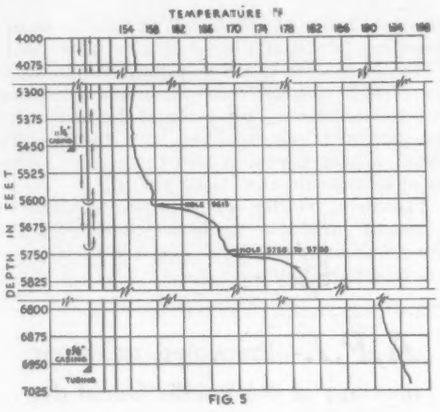


FIG. 5

11¾-in. casing was set at 5,464 ft. and the 8⅝-in. casing was set at 6,980 ft. The tubing extended into the liner below 7,000 ft. and was shut in at the surface. A portable compressor was moved to the well and gas was injected between the 11¾-in. casing and the 8⅝-in. casing through the holes in the latter, returning to the surface through the annulus between the 8⅝-in. casing and the tubing. Some fluid also was being produced between the 8⅝-in. casing and the tubing.

After the fluid had been depressed by the injected gas to a point below the holes in the 8⅝-in. casing the injection pressure dropped. The temperature recorder was then run in through the tubing and the traverse was made from 4,000 ft. to 7,000 ft. Between 5,615 ft. and 5,620 ft., and between 5,735 ft. and 5,750 ft., sharp increases in temperature are shown as the gas passed through the holes into the fluid inside of the 8⅝-in. casing. The tubing was pulled and a double packer was run in. The area was tested and a hole was found at 5,613 ft. Circulation through the hole was established with a pressure of 2,500 lb. and 2 cu. ft. of water per minute was circulated through the hole. The area from 5,725-75 ft. was tested on two separate runs with the double packer but the hole indicated by the thermal log was not found. A third attempt proved successful and a hole was found between 5,728 ft. and 5,739 ft. Circulation was established through the hole and 0.8 cu. ft. of water per minute was circulated at a pressure of 2,500 lb.

The thermal log with gas injection can also be used under certain conditions to locate holes in tubing, or holes between any two strings of pipe.

Testing Gas-Injection Wells.

In gas-injection wells knowledge of the area taking the gas is important. Fig. 6 is a thermal log made in a gas-injection well. The traverse was made through the tubing which was landed near the bottom of the well and the gas was being injection through the annulus between the tubing and the casing. The fluid was depressed to 8,170 ft. by the injected gas and a change of gradient from the top of the perforations to the fluid indicates the formation through this area was taking the gas.

Conclusion

Many useful applications for precision temperature measurements in oil wells exist, and others will be found as work of this nature is continued. In this brief paper it is not possible to set forth all of the applications and limitations of thermal logging to producing wells, but the examples given illustrate a few of them and will serve to suggest many others. Thermal logs assist in securing better performance of the wells. The data can be obtained with a minimum of equipment; no great amount of time is required for the field work; interpretations can be made according to established principles. The continuous film record that is magnified many times as it is transferred to chart paper, without error in the record, opens up new possibilities in thermal logging and many other types of precision measurements made in oil wells.

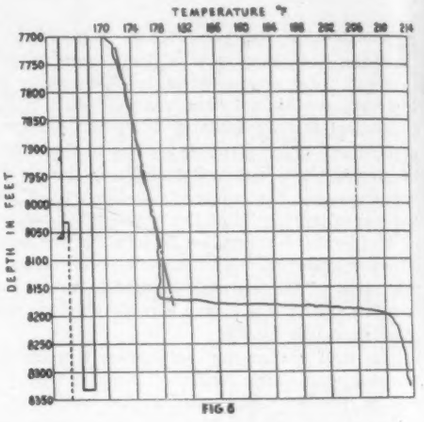


FIG. 6

References

1. C. E. Van Orstrand: Geothermal Data of the United States, U. S. Geological Survey, Bull. 701 (1920).
2. R. W. French: Geothermal Gradients in California Oil Wells, Spring meeting, Pacific Coast district, A.P.I., Div. of Prod. (1939).
3. C. V. Millikan: Temperature Surveys in Oil Wells. A.I.M.E. Technical Publication 1258 (1940).

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Influence of Alloy Additions On Corrosion Resistance

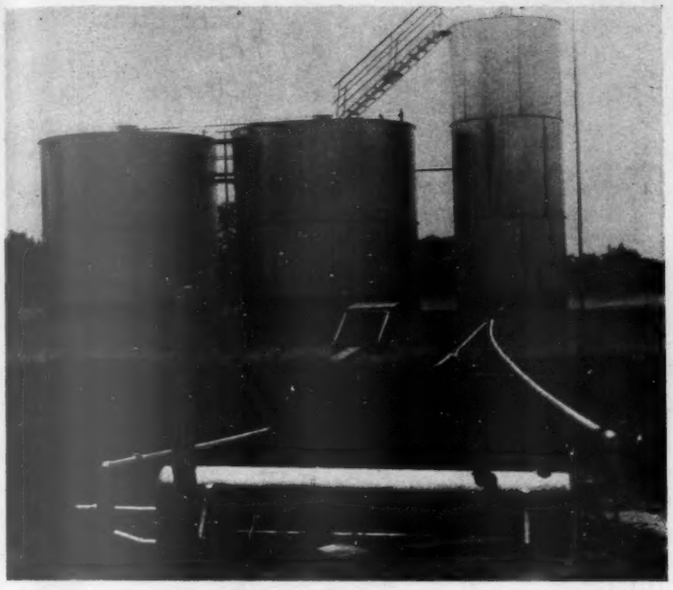
(Continued from Page 48)

the same general influence as an increase of 1.0 per cent in the chromium content.

These results, as well as others which have been made available, indicate that exactly comparable results may not be obtained from the strip specimens and from commercial tubes. Both types of tests show the chromium content to be a very important factor in imparting corrosion resistance but in general increased silicon content, or the addition of aluminum, seems to improve the resistance of actual tubes to a greater extent than the strip specimens. This is evident from a comparison of Figs. 1 and 3. Stress, as well as velocity and flow conditions, may be factors causing these differences.

The results which have been set forth were obtained under specific operating conditions. The character of the crude, as well as variations in the operating temperature and pressure might definitely shift the various curves but it is believed that the steels will still retain their same relative order of merit, a belief substantiated by the data of Fig. 1. These curves should therefore, serve as a guide in the selection of steels for oil-refinery service.

Operating Ideas



Heater For Treating Oil

To facilitate treating of oil, a producer in the Aransas Pass field, Texas Gulf Coast, has arranged to heat the oil in the gun barrel by means of a small, gas-fired heater fabricated from a short section of 10-in. pipe. This section, sealed at the ends except for burner line openings and vent, provides the heating shell through which the 2-in. oil-circulating line from the bottom of the gun barrel passes. The oil ordinarily does not require much heating, and the heater serves mainly to "roll" the oil in the gun barrel. Gas is supplied by a 1-in. line from the nearby lease service manifold.

Box Used For Holding Dry Mud

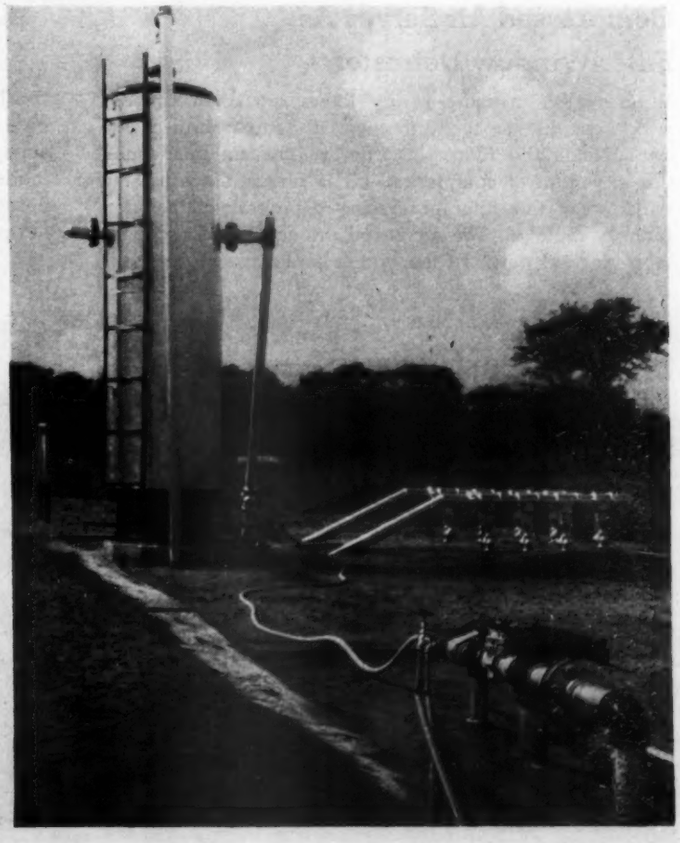
Where large quantities of native mud are used in rotary drilling, the sacking, handling and mixing of the ground material add to the cost of the operation. In California many operators prefer the bulk system. The photograph shows a bin into which trucks dump the dry mud and from which it flows or is shoveled into the hopper of the jet-type mixer. The hole to the left of the shovel is above the hopper. The 20 by 20-ft. platform is made from 2 by 12-in. lumber and rests on 8 by 8-in. sills. The structure is firmly bolted together and can be moved as a unit.

Carrier For Tubular Material

A tool-pusher, who also supervises some production crews frequently, has occasion to carry tubular material on, or in, his car. He had short T-stands made which fit into sockets bolted on the bumpers and running board. The T-stands are carried in the back of the car and can be installed in a few moments.

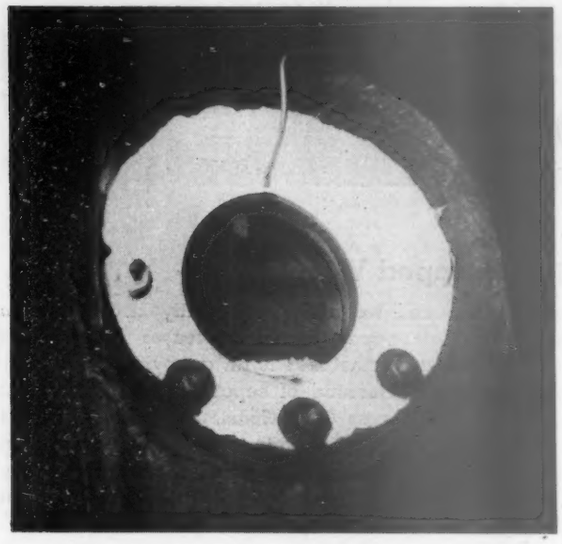
Separator Equipped With Gas Jet

Removal of sediment and water that frequently accumulate in the bottoms of separators, particularly on leases where wells have little or no pressure, sometimes is an annoying if not difficult job. To simplify the cleaning of separators, a producer in the Aransas Pass field, Texas Gulf Coast, has provided a jet connection in the bottom of the separator with a hose connection from the nearby gas manifold, which supplies gas for various lease uses. To clean the separator it is only necessary to open a small valve, and the accumulation is quickly ejected.



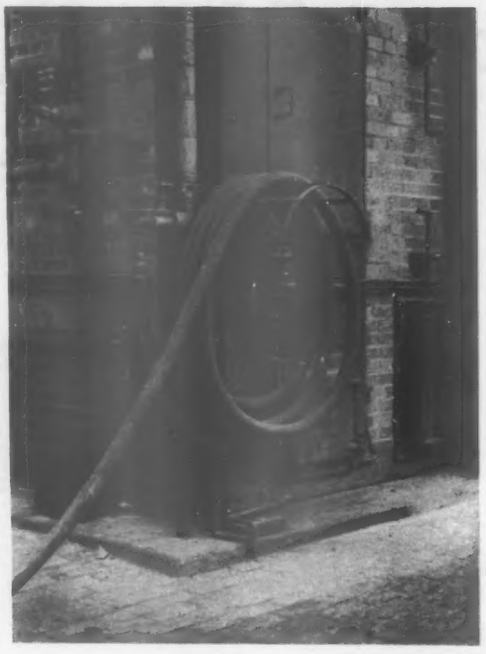
Refinery IDEAS

. . . that save $ $ $



Compressed Air Serves As Filter-Window Defroster

Windows on pressure rotary filters are often covered with frost due to the difference in temperature inside and outside the filter. In order to prevent this condition a stream of compressed air is directed against the windows of this filter processing a propane-oil solution for wax removal. The air is fed through a ¼-in. copper tube pinched down at the end to make a small orifice.

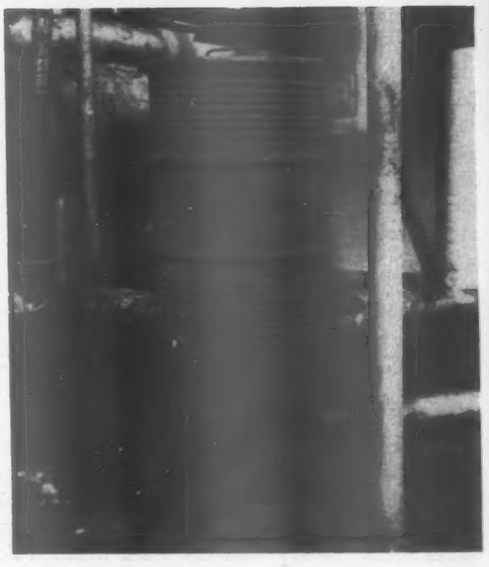


Hose Rack Is Made From Strips of Scrap Iron

This convenient welded hose rack is made entirely of scrapped metal. Its use not only reduces wear on the hose but also enables the operator to handle it more easily. Now with rubber hose worth a premium it is all the more necessary to conserve the rubber as well as make the hose convenient for the operator.

Old Drum With Steam Coil Serves As Dryer

The easily constructed heater shown here is used for drying out Dowtherm. Steam in a closed coil is used for heating and an ordinary drum used for the body. It is set up on a metal base. Use of superheated steam is made to raise the temperature above the boiling point of water.



Drum Head Serves As Cover

Old drum heads can be used as covers for drums filled with hot petroleum which must be allowed to remain open until the contents cool. The drum heads provide complete protection and make it possible to store the petroleum drums outside during cooling. The projection over the side also eliminates water.

Static Electricity Eliminator

These devices have been installed so that static electricity cannot build up in a container when samples are taken from a filter. Small samples are taken from a tube attached to the outlet on the filter discharge line as shown in the accompanying picture. The hook at the right of the sample bottle is used to suspend a pail when larger quantities of the oil are to be taken off. Use of this device will not only protect against possible oil ignition but relieve the operator of shock.

"Rubber Doughnut"

...CES OF RUBBER THAT SAVES MANY POUND...

Split bonnet held together by two alloy steel bolts, facilitates renewing stem packer.
Gate stem reveals extent of wear on resilient flow-way insert when valve is in closed position.
Lip-type stem packer requires no packing gland.
Heat treated alloy steel gate shown in closed position embedded in the resilient flow-way insert. In open position it is retracted completely out of the flow-way.
Renewable resilient flow-way insert which absorbs cutting action of abrasive-laden fluid and which may be replaced in the field, quickly and at low cost. Note how the resilient insert provides a pressure-tight seat for the gate and seals the two-piece valve body.
Replaceable alloy steel wear ring which protects the hub ends against cutting.
Hubs with any type of end connection desired are interchangeable and are attached to the body by interlocking shoulders and grooves. Loosen the body bolts and the hubs will swivel like a union when making up in a manifold.
Forged steel body in two pieces to facilitate changing the flow-way insert.

This renewable resilient flow-way insert (alias "rubber doughnut") for Cameron Flex-Seal Mud Valves was famous for its efficiency and time and money saving features long before steel joined the ranks of critical materials. But now that every pound of steel must be carefully conserved the few ounces of rubber in the "doughnut" is of even greater value because it slowly absorbs the cutting action of abrasive-laden fluids, and thus prevents the erosion that quickly claims the lives of so many conventional mud valves.

Rubber (or synthetic compound) is itself critical, but since the use of a few ounces in this unique resilient flow-way insert is largely responsible for the elimination of 93% of the maintenance required by other types of mud valves and stop cocks there is a considerable net saving of critical materials realized. For example, $0.13½ per thousand feet of hole for maintenance on Cameron Flex-Seal Mud Valves compared to $2.25 per thousand feet of hole for maintenance on competitive types of valves under identical conditions.

Study the cut-away view of a Cameron 6,000-Lb. Test Flex-Seal Mud Valve shown at left and note its sturdy construction and sound mechanical design. This valve is also available in 4000 and 2000 Lb. test pressure models, which employ essentially the same basic principles. See your Composite Catalog for complete details, or literature will gladly be sent on request.

CAMERON IRON WORKS, INC.

711 MILBY ST., HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y.
California: Howard Supply Co., Los Angeles.
Oklahoma: Paul Edkin, Tulsa.
Rocky Mountain: Mountain Sales and Service, Casper, Wyoming.

QUESTIONS ON TECHNOLOGY

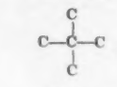
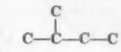
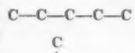
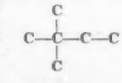
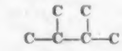
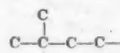
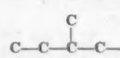
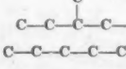
By W. L. NELSON, Technical Editor

What Is the Charge Stock For Isomate Process?

We understand that mixed pentanes and hexanes are the charge stock for the Isomate process which is used for the manufacture of 100-octane fuels. Where can we obtain such materials?—J. E. B.

The Isomate process which has been recently announced by Standard Oil Co. of Indiana is essentially an isomerization process by which pentanes and hexanes are converted from straight-chain into branched-chain hydrocarbons having the same number of carbon atoms as the feedstock hydrocarbons. The increase in octane number produced by such a conversion process is indicated by the octane-numbers of the hydrocarbons shown in Table 1.

TABLE 1—OCTANE NUMBERS OF HYDROCARBONS BOILING BETWEEN 50° AND 165° F.

No.	Name—	Structure	Boiling point (°F.)	Octane No. (motor)
1.	2,2-dimethyl propane (neopentane)		49	83
2.	2-methyl butane (isopentane)		82	90
3.	normal pentane		97	64
4.	2,2-dimethyl butane (neohexane)		121	95
5.	2,3-dimethyl butane		136	95
6.	2-methyl pentane (isohexane)		140	73
7.	3-methyl pentane		146	74
8.	normal hexane		156	59

The normal pentane-hexane fraction obtained in the distillation of either crude oil or natural gasoline consists largely of normal pentane (No. 3) and normal hexane (No. 8) which have low octane numbers. All of the other hydrocarbons in the table have higher octane numbers, and it has been found in conducting the Isomate process that the octane number is raised from about 60 to over 80. Little has been announced concerning the process but it probably consists of a high-temperature catalytic isomerization process involving the use of an alumina catalyst carrying aluminum chloride or other halides of aluminum. Large ultimate yields (over 90 per cent) are claimed, and the boiling range of the product is little different from that of the charge stock.

The recommended charge stock is a debutanized naphtha having a maximum boiling point of about 165° F. Thus, it is a stock from which butane has been removed, and containing essentially pentanes and hexanes. Such a stock may be obtained from either crude oil or natural gasoline. Average paraffin and mixed-base crude oils contain only 3-4.5 per cent of such a material (9-15 per cent of the straightrun gasoline) and hence a crude capacity of at least 15,000 bbl. per day would be required in order to produce the 500-bbl. per day charge stock that is necessary for economical operation of the Isomate process. The pentane-hexane content of natural gasoline is much higher, being 40-55 per cent. The lower figure is for a 10 R.v.p. gasoline and the 55 per cent for a 30 R.v.p. gasoline. However, it would be necessary to use about 42,000 gal. per day of natural gasoline to produce enough pentane-hexane for a 500-bbl. per day Isomate plant.

The composition of the pentane-hexane fraction that is present in average natural gasoline is somewhat as follows:

	Per cent
Normal pentane	28
Isopentane	36
Normal hexane	22
Isomeric hexanes	14

In crude oils the composition of the pentane-hexane fraction is not uniform. This may be illustrated by the ratio of normal hexane to other hexanes as given by Bates and others in the February 1941 issue of Ind. and Eng. Chemistry (see Table 2).

TABLE 2—KIND OF HEXANES IN GASOLINE

	Ratio of normal to isohexanes	% normal hexane in total hexanes
East Texas, straightrun gasoline	1:1	50
Turner Valley (Alberta,) straight run	1:1 (1.3)	43-50
Mid-Continent straightrun gasoline	1.06	62.5
Yates (Texas) straightrun gasoline	1:2	33.3
Plant-stabilized naphtha	1:0.8	55.5
Thermally cracked gasoline and naphtha	1:05 (0.6)	62-67
Thermally polymerized gasoline	1:2	33.3
Houdry catalytic gasoline	1:10 (15)	6-9

Wick Char and Smoke Point Tests (L.I.C. Specifications)

Will you please tell us where we can obtain literature on the L.I.C. specifications for petroleum products? We are interested particularly in the wick char (L.I.C.* No. 90.02) and the distillation (L.I.C. No. 10.01) tests.—M. S. A. and M. B. K.

According to the British Petroleum Mission, McGill Building, 908 G Street, Washington, D. C., the L.I.C. specifications which were originally used in specifying shipments to the United Kingdom under the Lend-Lease Act, have been replaced by other tests such as the A.S.T.M. and F.S.B. (Fed. Stock Catalog) tests methods used in this country. Requirements of the United Kingdom can be obtained through the British Petroleum Mission at Washington, D. C.

*The letters L.I.C. refer to Laboratory Information Circulars, and are being used by one of the major oil companies in designating tests for its own personnel.

In only two instances are little-known specifications employed. These are the Wick Char (I.P.T. Burning Test K 35T) and the Smoke Point (I.P.T. Test K 36) in connection with kerosene. The I.P.T. tests are specified by the Institute of Petroleum, Aldine House, Bedford Street Strand, London W.C.2, England.

In the British burning-point test, the test lamp is burned for 24 hours without refilling. The char on the wick is then removed and weighed as milligrams per liter (Wick Char). (Jackson, J. S., Proc. World Petroleum Congress, 2, 699, 1933.). The I.P.T. smoke point is the maximum height in millimeters that can be obtained when the fuel is burned in a special lamp without smoking. The lamp has an integral scale and a white background for assisting in detecting smoke (Terry and Field, I.E.Ch. Anal. Ed. 8, 293, 1936, and Kewley and Jackson, J. I. Pet. Tech. 13, 364, 1927). Inferior kerosenes have a smoke point of 12 whereas the finest gasolines have a smoke point of 40.

Grease Formulas

Will you please advise us to where I may be able to obtain formulas for the compounding of lubricating greases and oils?—W. D. W.

The question is stated in the proper way, because there are literally dozens and perhaps hundreds of grease, oil and specialty formulas, and they are not listed in a single reference. A somewhat complete list of formulas, etc., is given by Japour in "Petroleum Refining and Manufacturing Processes" (1939) of the Wetzel Publishing Co., Los Angeles, Calif. Other books that contain some formulas are:

1. The Waverly Handbook, Waverly Oil Works Co., Pittsburgh, Pa.
2. Klemgard, "Lubricating Greases" (available through the Book Department of The Oil and Gas Journal).
3. Lockhardt, "American Lubricants" (1920), Chemical Publishing Co.
4. Holde-Mueller, "Hydrogen Oils and Saponifiable Fats and Waxes."
5. Hilditch, "Fats and Waxes."
6. Wright and Mitchell, "Oils, Fats and Waxes."

The late Dr. C. K. Francis, who conducted this page for many years, discussed numerous grease formulas such as axle and cup, August 3, 1933; cup, December 21, 1933; sett, August 9, 1934; and latex and rubber, December 23, 1937, and March 3, 1938. In addition, the following references are suggested: Extreme pressure, J. W. Thompson, National Petroleum News, Page 30, September 30, 1936; lucid compounds, C. H. Kopp, Petroleum Engineer, Page 84, October 1932; specialties, S. J. Caplan, Petroleum Engineer, Page 47, May 1932; soluble cutting compound, S. J. Caplan, Petroleum Engineer, Page 95, November 1930; cold-set rosin and axle, H. L. Kauffman, Petroleum Engineer, Page 72, February 1931; hot roll mill, S. J. Caplan, Petroleum Engineer, Page 121, September 1930; and general, H. R. Mathas, Petroleum Engineer, Page 85, December 1930.

CO$T Engineering

VENT VALVES ON LEASE TANKS PAY FOR THEMSELVES QUICKLY

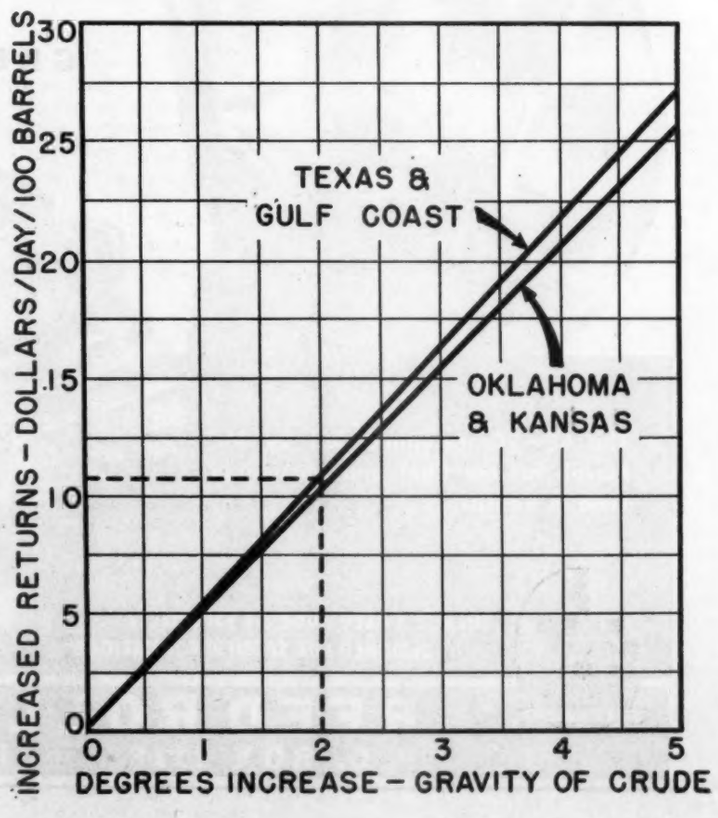
Most operators are conscious of oil losses from lease tankage, and accordingly take steps to remedy the situation, but many overlook the losses in gravity and volume caused by vapor losses. Or, if they take steps to keep their tankage gastight, they do not complete the job by installation of gastight thief valves and vent valves so that the tanks are kept under a few ounces pressure. Cost of this extra equipment is relatively low and in many instances has been found to pay for itself in less than 1 week.

When installing vent valves it is important the tankage be tightened so that leakage is eliminated. If the tankage consists of bolted steel tanks it is generally accepted that not over a 4-oz. valve be used; if it is a wooden gastight tank, not over 2-oz.; if vapor-pressure wood tanks are used a 12-oz. valve is considered maximum. As it is the general practice that the various tanks be pressure-equalized, with provisions for isolating any one tank, the valve is placed in the vent line.

Pumpers, gagers and switchers should be instructed in the operation and proper use of these valves. They should also be encouraged to inspect them periodically to see that the valves are operating and that the prescribed pressure is being maintained on the tanks. Failure to isolate a tank while gaging, thieving or running oil from it, will result in much of the advantage of the vent valves being lost. The valve which isolates the tank should either be located close to the thief hatch or should have an extension handle reaching to that point.

Through installation of vent-line valves it is not uncommon for the oil gravity of a battery to be raised as much as 1° A.P.I. If the oil is sold on a gravity basis with a 2-cent differential then the added money resulting from gravity conservation would be $10 for the sale of a 500-bbl. tank. In addition to this added revenue, tests have shown that for each degree of gravity saved the volume is raised by about 2 per cent. Cost of a 2-oz. valve is about $20 and of a 4-oz. about $30, plus installation costs, so it is seen they can quickly pay for themselves.

The accompanying chart shows the increased returns that may be gained by gravity conservation, taking into consideration the 2 per cent volume increase and 2 cents per degree price differential. It is applicable only for crudes less than 40° A.P.I.; the basis is 100 bbl. per day. As an example of the chart's application, suppose that a producer was able to raise the gravity of a 500-bbl. battery in a Texas field from 35° to 37°. Reading up from 2° on the bottom to the intersection of the diagonal Texas line and across to the vertical key, we find that the increased returns per 100 bbl. is $10.75. Or for each 500-bbl. sale the added return is $53.75.



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REED ROLLER BIT CO.
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Engineering Fundamentals

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL No. 3

PRESSURE RELATIONSHIPS—PART 2

IN Installment 2, liquid pressures were discussed mainly in terms of pounds per square foot and pounds per square inch. Other pressure units that are often used in engineering calculations are: ounces per square inch, inches of water, feet of water, and inches of mercury.

Pressure values are usually from instruments known as gages or manometers. Pressure gages are commonly graduated to indicate pressure in pounds per square inch above atmospheric pressure. Vacuum gages are usually graduated to read inches of mercury below atmospheric pressure. The simplest type of manometer, or U-tube, is shown in Figs. 1 and 2. A scale, usually marked in inches, is attached between the two sides of the glass U-tube. The glass U-tube is filled with water if the pressure or vacuum is to be read in inches of water, or with mercury if the reading is to be taken in inches of mercury.

It is desirable that anyone who deals with pressures be able to convert a pressure value from one unit to another. It is easy to see that a pressure of 1 lb. per sq. in. is equivalent to a pressure of 144 lb. per sq. ft., since there are 144 sq. in. in 1 sq. ft.

A column of mercury 30 in. in height would exert a pressure at its base of 14.7 lb. per sq. in. Likewise, a column of water 34 ft. high would exert a pressure at its base of 14.7 lb. per sq. in. So, as stated in Installment 1,

30 in. of mercury = 34 ft. of water =14.7 lb. per sq. in.

Knowledge of the three pressure equivalents given will eliminate the necessity of remembering numerous conversion factors. These three units at this particular value of pressure are used because it is the average value of atmospheric pressure at sea level. This value of atmospheric pressure is often spoken of as a standard atmosphere..

Before dealing further with pressures it will be necessary to define certain terms that are used relating to pressures, such as atmospheric pressure, gage pressure, vacuum, and absolute pressure.

Atmospheric pressure.—The earth is surrounded by an immense blanket of air several miles thick. Against any surface exposed to the open air near the earth's surface there will be a pressure against that surface equal to the weight of a column of air several miles high. This pressure amounts to about 14.7 lb. per sq. in. at sea level. Atmospheric pressure becomes less at a higher altitude because there is a shorter column of air above such a point. Although air is not of uniform density, as is water, it is interesting to note that atmospheric pressure is caused by the weight of a column of air above a point just as pressure is caused by the weight of the column of water described in Installment 2.

Gage pressure.—A manometer with one arm connected to a pressure greater than atmospheric pressure with the other arm open to the atmosphere, as illustrated in Fig. 1, will indicate the difference between atmospheric pressure and the pressure in the vessel. In a like manner, a pressure gage reads the amount that a certain pressure exceeds atmospheric pressure at the point of measurement. Such a reading is designated as gage pressure. Thus in Fig. 1, we say the gage pressure in the gas chamber illustrated is 0.433 lb. per sq. in., or 12 in. of water. The same thing may be stated in another manner by saying that the pressure is 0.433 lb. per sq. in., gage, or that it is 12 in. of water, gage.

Vacuum.—A manometer with one arm connected, as in Fig. 2, to a pressure less than atmospheric will indicate the amount that the atmospheric pressure exceeds the pressure in the vessel. In like manner vacuum gages indicate the amount that a certain pressure is exceeded by atmospheric pressure. So in Fig. 2 the reading is 12 in. of water, vacuum, or 0.433 lb. per sq. in., vacuum.

Since a vacuum gage generally reads in terms of inches of mercury, the reading that would be obtained with a vacuum gage on the gas chamber in Fig. 2 will be calculated:

0.433 lb. per sq. in., vac. = 0.433/14.7 = 0.02945 standard atmospheres, vacuum.

0.02945 × 30 = 0.88 in. of mercury, vacuum.

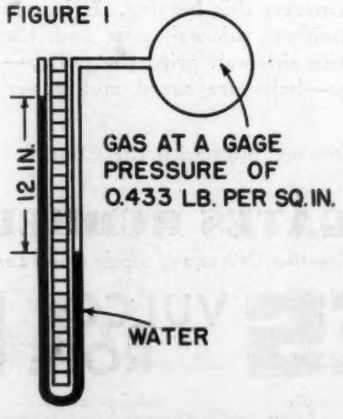
Absolute pressure refers to the total pressure at the point under consideration. In other words,

Absolute pressure = atmospheric pressure + gage pressure, or

Absolute pressure = atmospheric pressure — vacuum reading.

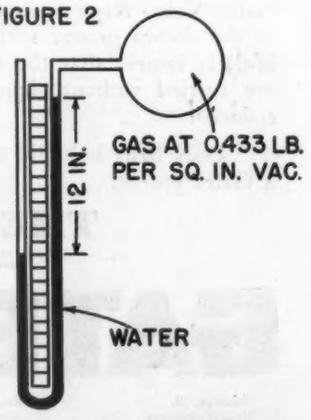
To illustrate, assume that under conditions of Figs. 1 and 2, the atmospheric pressure is 14.3 lb. per sq. in., abs. The pressure in the vessel of Fig. 1 is 14.3 + 0.433, or 14.733 lb. per sq. in., abs. The pressure in the vessel of Fig. 2 is 14.3 — 0.433, or 13.867 lb. per sq. in., abs.

FIGURE 1



SIMPLE MANOMETER INDICATING PRESSURE

FIGURE 2



SIMPLE MANOMETER INDICATING VACUUM

Series prepared by Glenn M. Stearns, associate professor of petroleum engineering, University of Oklahoma

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It Will Show You A REAL SAVING *in Belt Costs!*

As a V-belt bends, you can actually feel its sides change shape! The top of the belt is under tension and grows narrower (see Figure 1, at right). The bottom is under pressure—therefore it widens. These stresses force a straight-sided V-belt to bulge in the sheave groove (Fig. 1), and this produces uneven wear on the belt sides, resulting in shorter life!

Now look at Figure 2. There you see how the concave side of the Gates Vulco Rope exactly corrects this bulging. It insures a perfect fit in the sheave groove with uniform side-wall wear and, therefore, longer life! It insures that the entire side-wall grips the pulley—heavier loads are carried without slippage—belts are saved and power consumption reduced.

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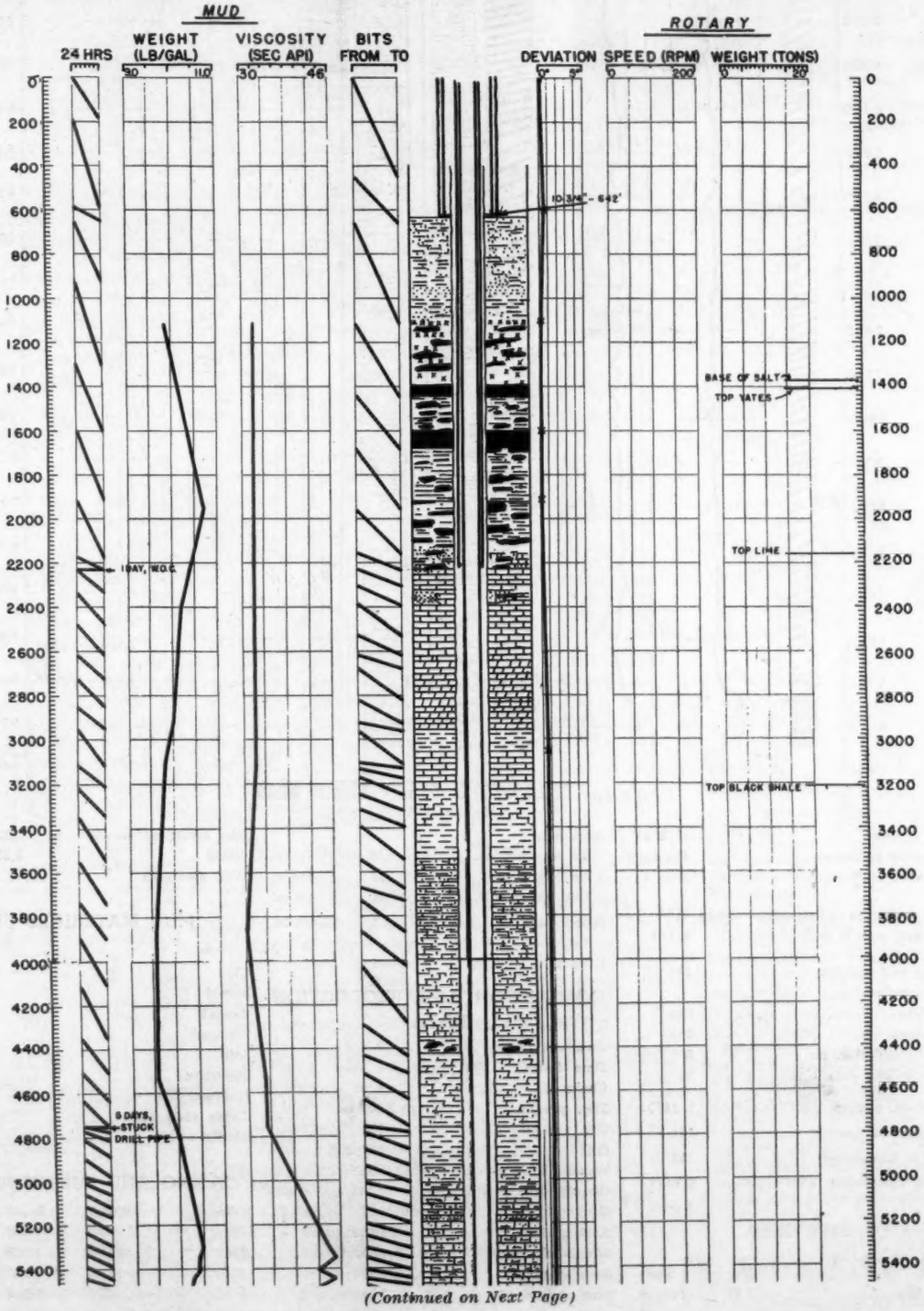
Journalog

A BIWEEKLY FEATURE OF THE OIL AND GAS JOURNAL

AMERADA PETROLEUM CO. 1 R-A UNIVERSITY — **ROWAN DRILLING CO.**

C SE NE SEC. 3, BLK. 48, UNIVERSITY LANDS — CONTRACTOR

Discovery Well of Barnhart Field, Reagan County, West Texas



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Journalog

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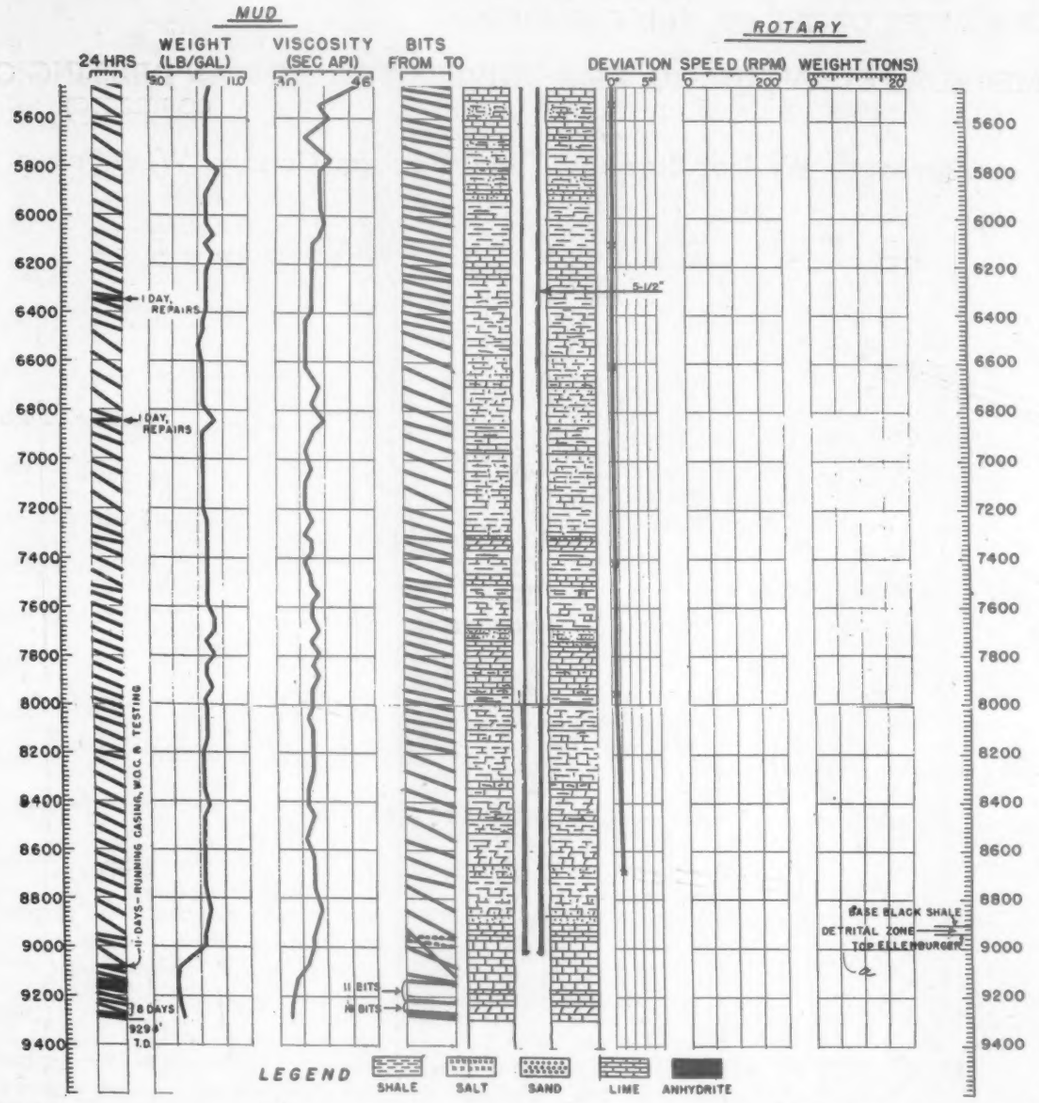

Date started	3/28/41
Rigging up rotary	2¾ days
Drilling started	3/31/41
Days drilling to casing point—rotary	116
Casing and W.O.C.	8 1/3
Coring and logging	1¼
Circulating	
Fishing	2/3
Repairs, etc.	3¼
Lost circulation, etc.	6
Net drilling time	96
Set 5½-in. casing	7/24/31
Days to total depth	144
Days to completion	155
Date of completion	9/2/41

BITS USED

	No.	Size
Drag bits	2	13¾-in.
Rock bits:		
To int. csg. pt.	6	9⅞-in.
To csg. point	104	6¾-in.
Csg. pt. to T.D.	34	4¾-in.
Core heads	2	6¾-in.
Total	148	

COMPLETION AND PRODUCTION DATA

Date completion	9/2/41
Time flowed	4 hrs.
Choke	1-in.
Tbg. pressure	200 lb.
Csg. pressure	175
Oil	187 bbl.
Water	None
Gas-oil ratio	2,140/1
Gravity	44.2° at 60° F.
Acid used	5,000 gal.
Ellenburger pay	9,017-86 ft.
Total depth	9,294 ft.
Plug-back depth	9,082 ft.
Ran electrical survey	2,225 to 9,080 ft.
Cored	8,955 to 8,995 ft.
Well elevation	2,768 ft.

MUD MATERIALS USED

Type—	Amount
Clay	3,716 sacks
Baroid	542 sacks
Zeogel	189 sacks
Aquagel	140 sacks
Salt	117 sacks
Impermix	84 sacks
Fiberlex	36 bales
Cotton seed hulls	22 sacks
Jelflake	7 sacks

CASING AND TUBING RECORD

Size—	Weight	Depth	Cement
10¾	24.60	627	200
7⅝	22.05	2,225	350
5½	17.00	9,017	250
2	4.70	9,044	...

Pipe-Line Activity

Eastman Asks for Control of Pipe Lines

A request by Defense Transportation Director Joseph Eastman that he be given control of oil pipe lines for the duration of the war aroused a controversy Saturday.

Under the present plan, control of pipe lines rests in the hands of Petroleum Coordinator Harold L. Ickes. Mr. Ickes and other officials of the Office of Petroleum Coordinator are vigorously opposing Mr. Eastman's demand.

J. R. Parten, Houston oil man, who has just been named director of transportation for OPC, is acting for Mr. Ickes.

Mr. Ickes and Mr. Parten are taking the position, it was understood, that crude pipe lines are a part of the oil industry and cannot be successfully operated except by the industry.

Sinclair Starts Construction of Oklahoma Trunk-Line Loop

Work starts this week on looping of the main crude-oil trunk line of Sinclair Refining Co. between Drumright and Prue, Okla., where 22 miles of 14-in. pipe will be laid for the purpose of enlarging facilities for moving crude oil northward. New pipe has been supplied for the project. The job has been contracted by O. C. Whitaker Co.

Crude Shipments Increase Through Eastern Lines

Deliveries of crude oil through eastern pipe lines in February declined 3 per cent from January but were 4.3 per cent above the like month of 1941.

Three fewer days in February as against the previous month accounted for the smaller deliveries in the latter month, but on a daily basis more oil actually was moving, an average of 874,000 in February compared with 820,000 bbl. in January.

For the first 2 months of this year deliveries aggregated 50,000,000 bbl., an increase of 35 per cent compared with the 37,000,000 in the corresponding period of 1941.

This year's deliveries by the nine lines formerly in the Standard group are increasing because of tanker transportation difficulties. All lines had gains over last year.

In the accompanying tabulation are shown deliveries for February and the first 2 months of this year with comparisons for similar periods a year ago, in thousands of barrels:

	February		Jan. and Feb.	
	1942	1941	1942	1941
Buckeye	8,633	5,981	16,810	13,026
Eureka	888	630	1,849	1,416
Illinois	7,320	4,525	15,523	10,027
Indiana	1,988	1,705	4,370	3,593
Natl. Transit	1,564	1,454	3,194	2,931
N. Y. Transit	990	739	1,898	1,529
Northern	1,323	876	2,524	1,899
Southern	664	359	1,355	676
S. W. Pa.	1,126	856	2,487	1,972
Total	24,496	17,125	50,010	37,069
Daily average	874	612	850	628

Phillips Presents Proposal For Wisconsin Line to FPC

In an application to FPC, for a certificate of public convenience and necessity, Independent Natural Gas Co., a wholly owned subsidiary of Phillips Petroleum Co., discussed a proposal for construction and operation of a 22-in. natural-gas pipe line from Ray, Tex., in the Panhandle field of Texas, to Milwaukee, Wis., a distance of approximately 877 miles.

The applicant proposes to sell natural gas at wholesale to the following utilities for resale to the public: Milwaukee Gas Light Co., Milwaukee system: Wisconsin Gas & Electric Co., Racine system; Madison Gas & Electric Co., Madison system; Wisconsin Public Service Corp., Sheboygan system; Wisconsin Michigan Power Co., Appleton system; Wisconsin Power & Light Co., Fond du Lac system; Wisconsin Southern Gas Co., Burlington system; Wisconsin Fuel & Light Co., Manitowoc system; Stoughton Light and Fuel Co., Stoughton system; Wisconsin Hydro Electric Co., Monroe system.

Federal Authorities Restrict Aerial Photography Activities

Restrictions have been placed on furnishing aerial photographs by the federal Government as well as on aerial photographing for mapping and other purposes during the war period.

In regard to furnishing of aerial photographs now in the possession of the Government, the Military Intelligence Division of the War Department has requested that sales be limited to material "for official use only." Prospective purchasers are asked to consider whether the information needed can be obtained from maps or other surveys. Persons securing such photographs become responsible for them under the terms of the Espionage Act, according to information furnished by Marshall S. Wright, coordinator of aerial photography.

"No camera equipment of any nature will be taken aloft by civil aircraft except with the specific approval of the War Department and under the control and supervision of War Department representatives."

Certain blanket arrangements have been made to provide for the functions of aerial photography organizations regularly engaged in mapping for pipe-line routes and for other activities of the oil industry.

The War Department has requested that it be announced that any aircraft not complying with emergency regulations or instructions for carrying them out may be subjected to antiaircraft fire or attack by combat aircraft at any time without warning.

Pipe-Line Activity Includes Projects Totaling 1,300 Miles

Pipe-line-construction activity indicated by lines which are now being laid, projects for which contracts have been let and projects for which permits have been issued by the federal Government that are expected to start this spring in the United States represents a total mileage of close to 1,200 miles. In addition to this a 100-mile crude trunk line is being built by American interests in Venezuela.

This figure does not include 2,600 miles of certain major projects under construction in 1941 which have been nearing completion in the early part of this year. In addition to these more than 1,000 miles of pipe is required for proposed projects needed for petroleum transportation and gas transmission which are waiting for government permits. It appears that the needs of the war program are making insistent demands for more pipe lines. Present pipe-line-construction activity compares favorably with what has been observed at this season in the best pipe-line years of the last decade.

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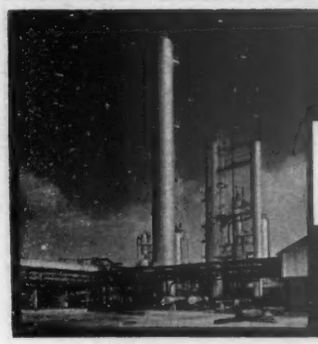
Progressive oil men make use of good books about their business. Nothing quite takes the place of knowledge, and the following books are recommended highly for the particular fields, for which they were written:

Diesel Engineering Handbook —MORRISON	$ 6.00
Elements of Diesel Engineering —ADAMS	4.00
Gas Engineer's Handbook—	7.50
Pipe Corrosion and Coating— LARSON	1.50
Piping Handbook—WALKER & CROCKEL	6.00
Done in Oil—LEVEN	10.00

Extend your library of sound reading with any one or all of these books. They will be send c.o.d. if desired; otherwise, full payment should accompany your order.

Book Department

The Oil and Gas Journal
Tulsa, Oklahoma



REFINERY ACTIVITY AND EXPANSION

Continental Installing Equipment at Two Plants

PONCA CITY, Okla.—Equipment is being installed at Continental Oil Co.'s refineries here and at Lake Charles, La., for the purpose of increasing productive capacity of lubricating oils and wax at the Ponca City plant and for the recovery of isopentanes in Louisiana.

The Ponca City refinery is the second largest in Oklahoma, having a crude capacity of 26,000 bbl. daily. Cracking capacity of the plant here is 14,500 bbl. daily, including 3,500 bbl. per day of catalytic hydroforming. The Cross cracking plant has capacity of 11,000 bbl. daily. The Lake Charles refinery went on stream last year (see The Oil and Gas Journal, November 20, 1941, p. 34).

Fred G. Fellows is superintendent of the Ponca City plant and J. W. Brown holds the same position at Lake Charles.

Cracking Plant Added by Great Bend, Kans., Refiner

GREAT BEND, Kans.—A cracking unit to process 1,200 bbl. of charging stock daily is under construction at the Plains Oil & Refining Corp. plant in Great Bend. Currently, the plant consists of topping equipment with capacity of 2,200 bbl. daily.

W. C. Berry, Jr., is president of the company; Robert L. Miller is crude-oil manager and R. W. Russell is superintendent of the refinery.

Two Canadian Refineries Add Processing Equipment

Expansion of refining facilities is under way at two Canadian plants.

At Calgary, Lion Refining Co. is installing a small cracking plant to operate in conjunction with a 500-bbl. straightrun distillation unit.

At Lloydminster, Shaw Petroleums, refinery division, is increasing its topping plant capacity to 650 bbl. daily.

Both refineries have asphalt plants.

L. L. Plotkus is general manager of Lion Refining Co. and H. C. Spaetgens is general superintendent for Shaw.

Isopentane Gas-Reversion Units Added by Union Oil Co.

LOS ANGELES, Calif.—Two new plants are under construction in Union Oil Co. of California's refinery here that will increase the yield of 100-octane gasoline components.

One unit will recover isopentane and should become available for operation next month.

The other construction project is a gas-reversion plant which will replace depreciated cracking facilities. Refinery-still gases, formerly burned for fuel, also will be converted in this unit to high antiknock motor fuel and will supply additional charging stock for the alkylation plant.

At the Bakersfield refinery, Union is installing more modern and efficient equipment for production of asphalt and road oils.

A catalyst has been perfected by Union chemists for dehydrogenation of certain hydrocarbons that will have application to the production of aviation gasoline and synthetic rubber. The company's research department has developed to pilot-plant scale an azeotropic process for purifying toluene and other aromatics.

Malco Refinery Planning To Produce 91-Octane Fuel

ARTESIA, N. M.—Installation of equipment to permit manufacture of 91-octane motor fuel, required in the Army and Navy aviation programs and for other military services, is planned in the near future at the Malco Refineries, Inc., plant here.

Control of Malco Refineries was acquired a few months ago by Bell Oil & Gas Co., Tulsa. The facilities currently in operation consist of topping capacity of 2,500 bbl. daily and a 1,000-bbl. cracking plant.

Lowell Naylor is superintendent of the refinery and C. A. Baker is assistant. Robert O. Anderson is president of the company, J. W. Lackey is general manager and A. C. Sturgis is chief chemist.

Allegany Refiners Install New Crude Unit at Bolivar

The Allegany Refiners, Inc., expect to have their new crude distillation unit at their Bolivar, N. Y., refinery in operation about May 1. The new unit will have a capacity of 1,500 bbl. daily. The present crude-oil capacity of the refinery is 1,050 bbl. daily.

The company is also installing a wax house and filter house at its refinery. This equipment was dismantled at the Titusville refinery of the Oil Creek Refining Co. and moved to Bolivar.

Sun Oil Co. to Spend $20,000,000 On Aviation Lube, Fuel Plants

PHILADELPHIA, Pa.—Sun Oil Co. plans refinery expansions this year costing approximately $20,000,000, it was disclosed in the annual statement issued last week.

A new plant will be constructed to produce special grades of aviation lubricants and another plant to produce aviation gasoline will be built. Sun operates refineries at Marcus Hook, Pa., and Toledo, Ohio, having combined crude capacity of 120,000 bbl. daily.

Vickers Petroleum Co. Considering Poly Plant

WICHITA, Kans.—Vickers Petroleum Co., Inc., is planning addition of a polymerization plant at its Potwin, Kans., refinery which has crude capacity of 4,500 bbl. daily. The plant is equipped with a cracking unit processing 1,250 bbl. daily.

The Vickers company is headed by C. L. Henderson who is also president of the Western Petroleum Refiners Association. A. M. Schrepfer is refinery superintendent, assisted by R. N. Moore.

Sketches of Plant Operators . . .

AUDLEY E. HARNSBERGER, recently appointed chairman of Pure Oil Co.'s refinery-control board, has had 22 years' experience in and about the petroleum industry. Eighteen of those years have been spent in Pure's refineries or refinery-control offices. Promotion to his new operating post is convincing evidence that his services have been valuable.

Acceptance of an assignment in the Refining Division of the Office of Petroleum Coordinator, Washington, D. C., by Cary R. Wagner, previous chairman of Pure's refinery-control board, left open the position to which Mr. Harnsberger was appointed earlier this month.

Functions of the board are thoroughly understood by Mr. Harnsberger for he has been a member of this vital cog in Pure's operations since 1928 when he was appointed chief mechanical engineer and transferred to the Chicago, Ill., company headquarters.

Mr. Harnsberger has a broad acquaintance in the petroleum industry. He is recognized as an authority on refinery operations and maintains an active interest in technical groups primarily concerned with refinery processing, design, construction, maintenance and operation. He is a member of the A.P.I. committee on corrosion of refinery equipment and a member of the American Society of Mechanical Engineers.

The new chairman of Pure's refinery group was educated in his native Virginia. He was graduated in June 1920 from Virginia Polytechnic Institute with the degree of bachelor of science. In July 1920 he was employed on the early-morning shift at the Worthington Pump & Machinery Corp., Harrison, N. J., as a student engineer. A little more than a year later he was given the job of engineering supervisor of the centrifugal test plant, which involved special assignments on design of this type of equipment.

Mr. Harnsberger joined Pure Oil Co.'s refining division in the Columbus, Ohio, offices, as assistant maintenance engineer in January 1924. In 1928 he was moved to Chicago. Since that time he has participated in the design and development of new refinery equipment, new processes, and supervised the maintenance of all Pure Oil Co. refineries scattered through four states—Texas, Ohio, West Virginia and Michigan.

Mr. Harnsberger's chief interest outside the oil industry is aviation. This diversion has resulted in his qualifying as a private pilot.

WHO'S WHO IN REFINING

THE Tide Water Associated Oil Co. was first organized as a holding company in 1926 for the Tide Water Oil Co. and the Associated Oil Co. and other operating units. These two principal subsidiaries were merged into the parent company in 1936, which became an operating unit.

The Tide Water Co. was one of the oldest refining organizations in this country. Its refining operations started at Bayonne, N. J., processing crude oil from the early eastern fields. The manufacture of lubricating oils from Pennsylvania Grade crude delivered to the Bayonne refinery through one of the industry's first pipeline systems is still one of the major phases of the present company's operations. The original Associated company was one of the early operating units in California.

The present company's refinery operations consist of four plants as follows:

Location—	Daily capacity (bbl.) Crude oil	Cracked gasoline
Bayonne, N. J.	67,500	13,800
Drumright, Okla.	12,000	2,300
Associated, Calif.	43,600	*8,000
Wilmington, Calif.	14,000	400

*Net figure after deducting cracked products used for alkylation-plant charge.

Cracking facilities of the Tube and Tank type are in operation at all plants. The largest unit of the Houdry catalytic cracking process was placed in operation last year at the Bayonne refinery. The Bayonne refinery operations are complete. Lubricating oils and asphalt are refined at the Associated refinery in addition to the usual products of skimming and cracking operations.

The Tide Water Associated Oil Co. operations include substantial crude production in California, the Southwest and in the eastern area. Pipe-line systems which the company owns or operates jointly with others gather and deliver crude oil to the Gulf Coast for tanker shipment to the Bayonne refinery. The California refineries are connected to fields by pipe lines. All crude for the Drumright refinery is delivered by the company's pipe-line system in that area.

The company's lubricating oils are distributed throughout the United States and many foreign countries. Other products are distributed throughout the eastern and western part of the United States with marketing facilities at many points in the Southwest and Middle West.

The company's operations are directed from the principal offices located at 17 Battery Place, New York City, with large western offices in the Associated Building in San Francisco, Calif. W. F. Humphrey is president and active head of the company's operations. Vice presidents of the company are C. R. Barton, J. D. Collins, B. I. Graves, R. B. Pringle, L. F. Bayer, L. C. Decius, K. R. Hankinson, L. D. Jurs, E. H. Salrin and U. B. Boucke.

Men well known in the refining industry are in charge of operations. General manager of refineries; East, C. R. Barton; Mid-Continent, G. R. Kinter; west, W. P. Hugo. Managers of research and development: East, J. T. McCoy, and west, H. Y. Hyde. Chief engineers: East, R. S. Stanfield; Mid-Continent, O. A. Gierow, and west, I. G. Reed. Chief chemists: East, D. Rothbard; Mid-Continent, R. W. Boyd, and west, L. Mittelman at Avon, and E. J. Iange at Wilmington. Superintendents: Bayonne, H. S. Chase, general superintendent, and G. C. Caine, assistant superintendent; Drumright, L. M. Jagou; Associated, T. O. Edwards, and O. Larson, assistant superintendent; Wilmington, D. D. Stark. Sales managers: East, R. E. Ryerson; Mid-Continent, J. W. Warner, and west, P. E. Allan. F. W. Keebler is process superintendent at Bayonne, and R. B. Fawcett is cracking superintendent at Associated.

Crown Central Considering Alkylation Unit in Texas

HOUSTON, Tex.—Installation of a catalytic cracking unit, alkylation plant and auxiliary equipment for the production of 100-octane gasoline is contemplated by Crown Central Petroleum Corp. at its refinery here. Details have not been completed but the new equipment would be reserved for exclusive production of government-controlled products for duration of the war.

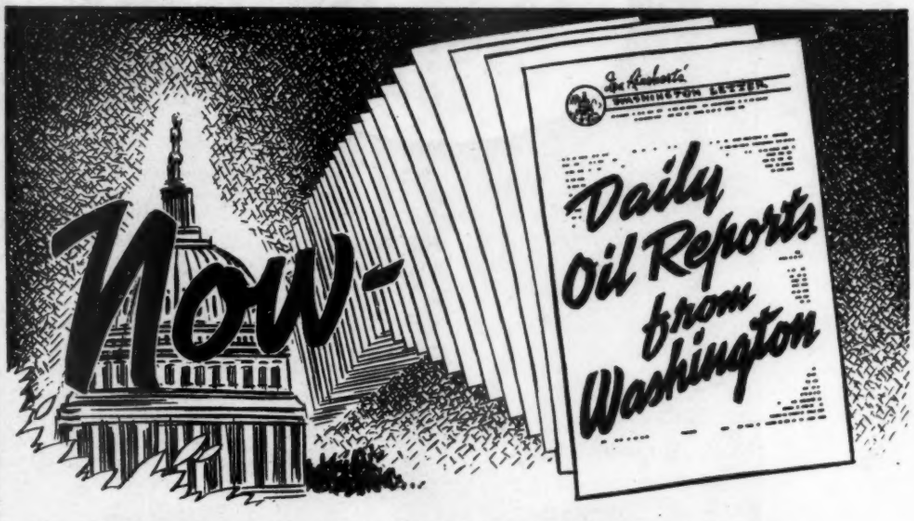
Crown Central's plant here has a crude capacity of 16,000 bbl. daily. A Holmes-Manley cracking plant has capacity of 8,000 bbl. daily and a lubricating-oil unit is a part of the refinery layout as now constituted.

K. W. Shimeall is general manager of refining and R. S. Myers is superintendent of the plant. J. H. Taboney is chief chemist.

Cracking Unit Installed At Tennessee Refinery

MEMPHIS, Tenn.—The new 900-bbl. Dubbs cracking plant constructed during the past few months at Delta Refining Co.'s plant in Memphis was to have started operations this week. Previously, the refinery consisted of straight distillation equipment handling 3,500 bbl. daily.

Delta Refining Co.'s plant has been in operation less than a year. Ronnie Smith is general manager; H. A. Taggart is process manager and W. A. Moody is refinery superintendent.



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ANALYTICAL DISCUSSIONS—TRENDS AND OPINIONS — OFFICIAL ORDERS AND THEIR ANALYSIS

TED KELLOGG
Washington Oil News Writer and Analyst

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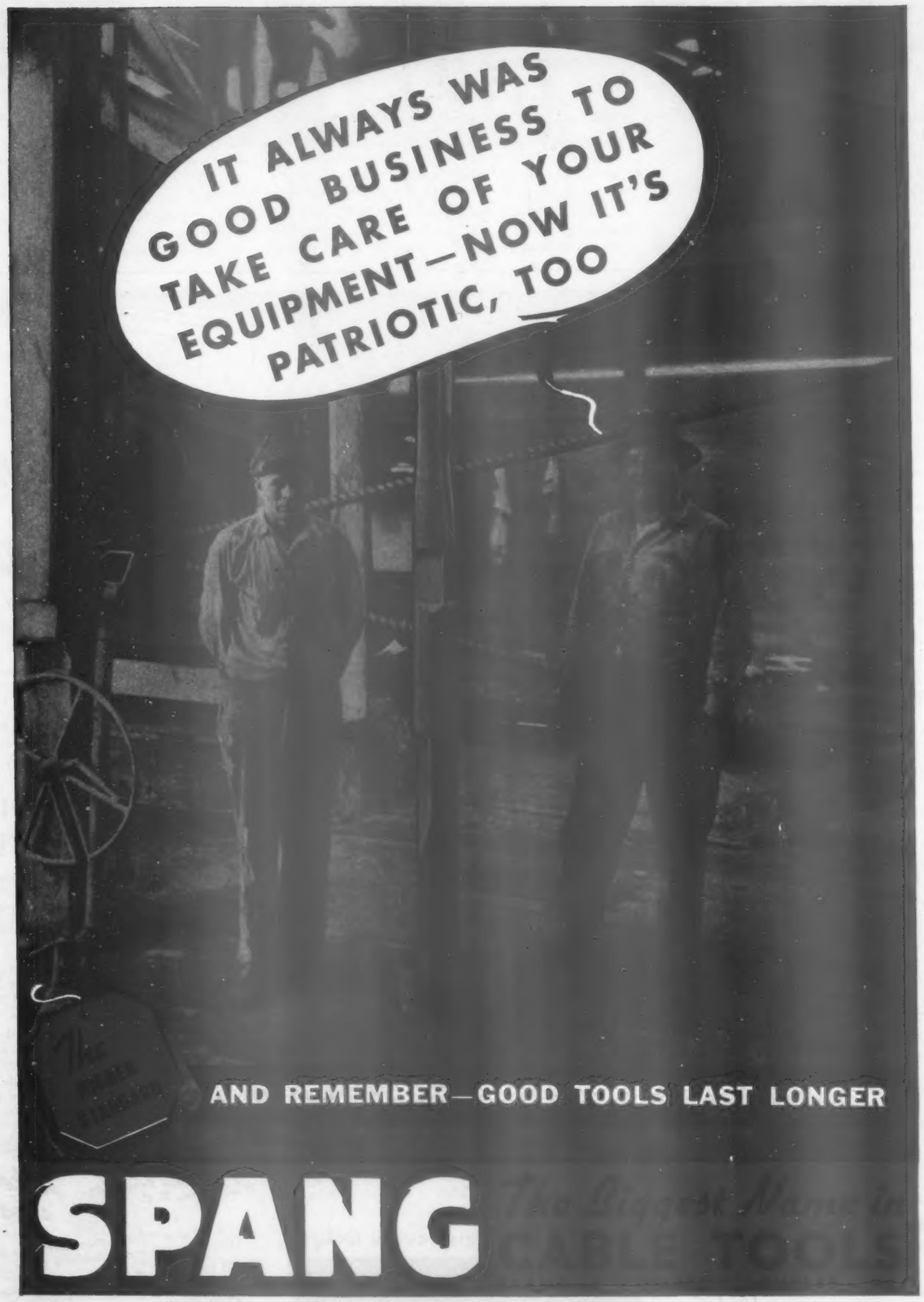

IT ALWAYS WAS GOOD BUSINESS TO TAKE CARE OF YOUR EQUIPMENT—NOW IT'S PATRIOTIC, TOO
AND REMEMBER—GOOD TOOLS LAST LONGER
SPANG

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Drilling restrictions have brought the total of completions far below the level which OPC now considers necessary for drilling activity during 1942. Last week, completions dropped 89 from the previous week and stood at 45 below the previous low level reached during the last week in February. All classes of wells showed substantial declines from the previous week, oil wells being down 48, gas wells down 13 and dry holes down 28. Expressed on a percentage basis, it appears that the favors shown to the eastern gas producers and wildcat drillers have not given the desired results. Contrasted with the preceding week, dry holes were down 25 per cent, gas wells 38 per cent and oil wells down 23 per cent. Using the previous low as a basis for comparison, gas wells are down 25 per cent, dry holes 19 per cent and oil wells only 10 per cent.

One difficulty which faces wildcatters is the fact that offsets to a discovery require more caution than stepping out for longer distances in a field that has undergone some development. In the latter instance, the structural slope has been determined and if the water level is known, it is possible to predict with at least fair accuracy, the results of a test ¼ or ½ mile distant. During recent months, the risks attending 40-acre locations in new pools have been made quite apparent. In the Bible Grove area in Illinois, the first well looked like a major discovery but the offsets ran away low and found no showings in the pay. The Midway field in Arkansas has had better results but this has been mainly owing to the great distance between the top of the pay and the water table. No offset to the discovery on 40-acre spacing was less than 38 feet lower. One offset was over 100 ft. deeper.

It thus appears as though less than 40-acre spacing must be considered for wells surrounding discoveries. Otherwise, the wildcatter can get little support for his venture when those aiding him to finance his well ond who own surrounding acreage have to step out so far for offsets that the risk is more than doubled. The wildcat campaign is slowing down rapidly and the 40-acre rule appears to be the reason.

At the present rate, completions for the year will not come within 4,000 of the OPC estimate of the 19,000 wells.

NORTH TEXAS: A southeast offset to the Turner discovery well in Montague County is showing gas and oil on drill-stem test (p. 67).

MICHIGAN: Good wells in the south end of the Reed City field are reviving interest in that sector. The potential discovery in Lake County is still testing (p. 83).

WYOMING: Increased output of black oil is expected due to greater demand from the Puget Sound area. Restrictions on drilling are impeding development of the east side of Lance Creek (p. 86).

EAST TEXAS: Despite the rapidity with which the Kildare discovery in Cass County got pipe-line connections, there is little activity in the area. Chapel Hill oil production has been extended 1 mile east (p. 67).

CALIFORNIA: A new field has been opened in the Buena Park district of Los Angeles County by what is believed to be an edge well. Three sands were found but only one was productive at this location. Oil sand has been found at what is either a new productive area or a major extension to Aliso Canyon. A good section of oil sand has been cored in a test in the Jasmine area. A deep test has been started in the old Kern River field (p. 68).

SOUTHWEST TEXAS: Two new Frio-Vicksburg fields have been opened, one between Sam Fordyce and Yturria in Starr County and the other southwest of Springfield in Jim Wells County. Seeligson is defined by a dry hole on the north end. A wildcat 4 miles southwest of the La Rosa field reports a good oil show (p. 71).

ILLINOIS: An offset to the Bible Grove discovery well, which was believed to be a major pool opener, is low in the McClosky with nothing showing in the first break. New production has been definitely opened 6 miles west of Rural Hill, Hamilton County, in the Cypress and in the Aux Vases northwest of Carmi in White County. An outpost, ½ mile southeast of Salem, is showing oil in the Benoist (p. 72).

WEST TEXAS: Good production in a southeast outpost to the Foster pool, Ector County, following completion of the largest producer in the pool is spurring development in this area. Deepening operations have begun in a north edge well at Big Lake to determine the extent of the recently discovered deep Permian pay. Clara Couch, Crockett County, has been defined on the north side. A test 6 miles southeast of the Nairn discovery in Lubbock County is reported 53 ft. high on the San Andres (p. 66).

INDIANA: McClosky production has been picked up west of Mount Vernon and 4 miles north of last week's Posey County discovery (p. 76).

PENNSYLVANIA: The second highest gage yet reported from an Onondaga chert gas well was obtained on deepening a Chestnut Ridge producer (p. 74).

TEXAS GULF COAST: Yegua production has been opened up in the Aldine area, Harris County. Gas distillate was recovered on a test at Bailey's Prairie at an elevation higher than in the discovery well which was abandoned late in 1940. Needville in Fort Bend County and Camp Eleven, Tyler County, have been extended (p. 70).

KANSAS: Saturation is reported from a test southwest of Peace Creek which is running high in the Viola (p. 77).

LOUISIANA GULF COAST: A new deep sand is producing on the south flank of Charenton, while a shallow sand has been found at East White Lake (p. 80).

COMPLETIONS IN ALL FIELDS . . .

(Week Ended March 14, 1942)

	Oil	Gas	Dry	Total	Footage	Ttl. comp. to date 1942	Ttl. comp. to date 1941
N. Y., Pa., and W. Va.	47	5	1	53	117,837	857	855
Ohio	2	5	5	12	31,499	218	272
Indiana	4	0	5	9	15,444	91	74
Kentucky	0	2	1	3	5,152	76	102
Illinois	7	1	10	18	43,414	435	574
Michigan	3	0	3	6	15,557	157	167
Kansas	1	0	13	14	41,540	354	317
Nebraska	0	0	0	0	0	9	17
Missouri, Iowa	0	0	1	1	287	3	2
Oklahoma	8	4	10	22	58,656	336	269
Texas:							
North Central Texas	9	0	11	20	65,779	363	498
West Texas	22	0	5	27	128,862	431	373
Texas Panhandle	5	0	0	5	15,166	141	97
East Texas	7	0	3	10	38,645	111	213
Texas Gulf Coast	10	1	3	14	95,613	210	202
Southwest Texas	15	0	3	18	78,114	301	301
Total Texas	68	1	25	94	422,179	1,557	1,684
North Louisiana	6	0	2	8	33,490	141	123
Louisiana Gulf Coast	4	0	4	8	64,326	148	164
Total Louisiana	10	0	6	16	97,716	289	287
Arkansas	3	1	1	5	29,500	34	32
Mississippi and Southeast	0	0	0	0	0	23	34
Montana	1	0	0	1	3,014	34	51
Wyoming	2	0	1	3	13,785	20	29
Colorado	0	0	0	0	0	4	6
New Mexico	2	2	0	4	14,898	57	63
California	6	0	2	8	45,851	214	211
Total United States	164	21	84	269	941,163	4,768	5,046
Total previous week	212	34	112	358			
Week ended Mar. 15, 1941	286	46	88	420			

Credit line. In the service on K.M.A. Ellenburger field appearing on Page 66 of last week's issue, credit for the two maps should have been given to Heydrick Mapping Co., Wichita Falls, Tex.

Large Producers Brought in On East Side of Foster Pool

By ROBERT INGRAM

MIDLAND, Tex.—The east side of the Foster pool in Ector County had another good producer last week and was to get further exploration. New well was the C. O. Davis et al 4 Charles Judkins, SW NW Section 16, Block 42, Twp. 2-S, T. & P. Survey, completed flowing approximately 1,020 bbl. on a special 8-hour Railroad Commission gage, or at the rate of 3.000 bbl. a day.

The well is a south offset to Davis 3 Judkins, completed for 12,710 bbl. a day for the largest initial potential in the pool, and an east offset to the A. J. Broderick and George Calvert 7 Bagley, a 7,167-bbl. well. The 4 Judkins found the first oil staining at 4,285 ft., with porosity at 4,290 ft. It was drilled to a total depth of 4,423 ft.

New exploration for the area, which is east of the southern part of the field and near the city limits of Odessa, was undertaken by the Richmond Drilling Co. which obtained a farmout from J. Y. Francis of Midland for 198.3 acres of the J. F. Maurice fee land.

Mr. Francis farmed out to Richmond that part of N½ Section 32, Block 42, Twp. 2-S, T. & P. Survey, lying south of the Texas & Pacific Railroad tracts and the northwest 80 acres of S½ of the same section. Richmond will drill its first test in the NW NW NW 80 acres of the south half.

Deep Test at Big Lake

Big Lake Oil Co. was ready to deepen its most northerly producer in the Big Lake pool of Reagan County in an attempt to determine the extent of the new deep Permian lime oil zone, the fourth pay for the field. The company applied for a permit from the Railroad Commission to deepen 117 University which is 1,692 ft. northwest of Big Lake 19-C University, discovery well for the deep zone.

The well to be deepened is 1,243 ft. from the south line and 466 ft. from the west line of Section 24, Block 9, University Land. It has passed its economical period of production from the 3,000-ft. pay level where it was originally completed, according to the application, and is now making only 1.44 bbl. of oil a day plus 14.40 bbl. of water. This zone, from 2,900-3,000 ft., was the first of three Permian pays in the field.

Big Lake 19-C University developed heavy production early in February from 4,310-73 ft. in a zone believed to be the Clear Creek section of the Permian, corresponding to the pay in the Tubb deep Permian field in western Crane County. The well was completed February 16 for an official 4-hour natural flow of 570.61 bbl. through open tubing.

Clara Couch Pool Defined

The Clara Couch pool in western Crockett County appeared to have been defined on the north by the striking of sulfur water by Humble 1-B J. W. Owens et al. Bailing was under way in an effort to exhaust the water from 1,972-75 ft., total depth. The test is 1,980 ft. from the north and east line of Section 8, Block GG, H. E. & W. T. Survey. It is ½ mile north of Humble 1 Owens, second producer in the pool, which is 1½ miles northwest of R. H. Henderson et al 1 Shell-Couch, discovery well.

Second Producer Completed for Tubb

Second producer from the Tubb horizon in the area opened recently in southwestern Crane County, 3 miles south of the Tubb pool, was assured by the Gulf Oil Corp. 4-B Tubb, Section 28, Block B-27, P.S.L. Survey. The well is ½ mile north and slightly east of the discovery in the Permian lime, Shell Oil Co. 1 Barnsley, and offsets Ordovician production.

Gulf 4-B Tubb, on a 20-minute drill stem test from 4,140-4-215 ft., flowed an estimated 20 bbl. of oil an hour after 12 minutes, with 683,000 cu. ft. of gas. It was drilling ahead below 4,576 ft. in lime and will be taken to the Ordovician. If it does not find production in the Ordovician, it will be plugged back to the Tubb level for completion.

One-half mile northeast of production on the extreme northeast side of the Tubb pool, Gulf 37 Waddell, Section 37, Block B-26, P.S.L. Survey, was coring below 4,410 ft. in shale and lime; Gulf 9 Waddell, Section 18, Block 3, H. & T. C. Survey, in the link area of the Sand Hills Ordovician pool, was drilling below 3,959 ft. in lime.

SOUTHERN WEST TEXAS COMPLETIONS

Wildcats

Ector County: Oil Well Drilling 1 J. L. Johnson, elev. 3,064 ft., flowed 20 bbl. through ½-in. tubing choke, shot and acid, top pay 4,210 ft., anhydrite 1,500 ft., Yates sand 2,720 ft., lime 3,870 ft., T.D. 4,510 ft., P.B. 4,353 ft., *discovery.*

Fields

Abell, Pecos County: Magnolia 5 Silverman-State, elev. 2,398 ft., flowed 681 bbl. natural through ½-in. tubing choke, pay 5,952 ft., Simpson 4,880 ft., Tulip Creek 5,140 ft., McKee sand 5,439 ft., Waddell 5,951 ft., T.D. 5,961 ft.

Sinclair Prairie 3 Heirman, elev. 2,394 ft., dry, Simpson 4,910 ft., Tulip Creek 5,165 ft., McKee 5,463 ft., T.D. 5,999 ft.

Apco-Warner, Pecos County: Skelly 1 V. W. Crockett, elev. 2,459 ft., flowed 919 bbl. natural through ½-in. tubing choke, pay 4,664 ft., T.D. 4,787 ft., P.B. 4,764 ft.

Irion, Irion County: Staley 1 Sugg est., elev. 2,469 ft., dry, anhydrite 673 ft., T.D. 3,585 ft.

Johnson, Ector County: Sinclair Prairie 35-B Johnson, elev. 2,991 ft., pumped 970 bbl., shot 4,100-4,220 ft., T.D. 4,230 ft.

Jordan, Crane County: Wasomes 6-2 University, old well, old T.D. 3,313 ft., T.D. 3,376 ft., shot 3,280-3,367 ft., pumped 100 bbl.

Keystone (lime), Winkler County: Richardson & Bass 3 B. F. Jenkins, elev. 2,965 ft., flowed 667 bbl. through casing after shot, pay 3,280 ft., T.D. 3,422 ft.

McElroy, Upton County: Gulf 267 McElroy, elev. 2,792 ft., flowed 426 bbl. through casing, shot, pay 3,002 ft., T.D. 3,190 ft.

Gulf 21 McElroy, old well, old T.D. 2,924 ft., T.D. 3,002 ft, pumped 193 bbl. after shot.

Sand Hills, Crane County: Magnolia 1 Katie W. Lea, elev. 2,650 ft., flowed 235 bbl. through 1-in. tubing choke, acid, pay 4,640 ft., T.D. 4,722 ft.

World, Crockett County: M. & M. 1-H Shannon, elev. 2,877 ft., dry, Yates 1,425 ft., T.D. 2,354 ft.

Major Extension in Prospect For Nairn Pool

Possibility of a major extension to the one-well Nairn pool in Lubbock County (most northerly production in the Permian basin) was seen last week when the top of the San Andres lime at Stanolind 1 J. F. Stinnett was correlated by some 53 ft. high to the discovery well, L. C. Harrison et al 1 W. G. Nairn. The wildcat is 6 miles southeast of the discovery.

It topped the San Andres at 2,980 ft., datum point of —156 ft., and was drilling below 3,525 ft. in lime. Another Lubbock County test 3½ miles east of Lubbock and 2¼ miles south of the Nairn pool, J. R. Sharp 1 Holman, Section 12, Block B, J. H. Gibson Survey, was fishing for cones at 4,955 ft. in lime.

NORTHERN WEST TEXAS COMPLETIONS

Wildcats

Dawson County: Ray Albaugh 1 Katherine Weaver Rose, dry, anhydrite 2,070 ft., Yates 2,850 ft., brown lime 4,090 ft., San Andres 4,430 ft., T.D. 5,273 ft.

Gaines County: J. F. Postelle 1 M. S. Doss, elev. 3,118 ft., dry, anhydrite 2,450 ft., T.D. 5,300 ft. in anhydrite.

Fields

Seminole, Gaines County: Magnolia and Atlantic 5-193 H.&J., elev. 3,314 ft., flowed 519 bbl. through ½-in. tubing choke, shot, pay 5,140 ft., T.D. 5,214 ft.

Slaughter, Cochran County: Devonian Oil et al 13-A Duggan, elev. 3,676 ft., flowed 1,350 bbl. through 2½-in. casing outlet after acid, T.P. 280-100 lb., pay 4,940 ft., T.D. 5,023 ft.

Devonian 13-B Duggan, elev. 3,687 ft., flowed 1,002 bbl. through casing outlet, acid, pay 5,018 ft., T.D. 5,064 ft.

Honolulu 6-58 Dean, elev. 3,689 ft., flowed 769 bbl. through 2½-in. casing outlet after acid, pay 4,960 ft., T.D. 5,030 ft.

Honolulu 30-17 Igoe & Smith, elev. 3,661 ft., flowed 947 bbl. through 2½-in. casing after acid, pay 5,014 ft., T.D. 5,040 ft.

Magnolia 26 Woodley, elev. 3,671 ft., flowed 719 bbl. through 3-in. casing outlet after acid, pay 4,930 ft., T.D. 4,980 ft.

Slaughter, Hockley County: Honolulu 19-5 Mallett, elev. 3,621 ft., flowed 790 bbl. through 2½-in casing outlet after acid, pay 4,950 ft., T.D. 5,015 ft.

Honolulu 9-A Slaughter, elev. 3,545 ft., flowed 1,234 bbl. through 2½-in. casing outlet after acid, pay 4,860 ft., T.D. 4,960 ft.

Honolulu 34-B Slaughter, elev. 3,517 ft., flowed 1,445 bbl. through 2½-in. casing outlet after acid, pay 4,931 ft., T.D. 5,018 ft.

Magnolia 14-F Mallett, elev. 3,597 ft., flowed 1,052 bbl. through 3-in. casing outlet after acid, pay 4,983 ft., T.D. 5,027 ft.

Texas 18-B Mallett, elev. 3,583 ft., flowed 712 bbl. through casing after acid, pay 4,960 ft., T.D. 5,026 ft.

Texas 106 Slaughter, elev. 3,549 ft., flowed 955 bbl. through casing, acid, pay 4,980 ft., T.D. 5,019 ft.

Texas 114 Slaughter, elev. 3,564 ft., flowed 1,987 bbl. through casing, acid, pay 4,968 ft., T.D. 5,030 ft.

Wasson, Gaines County: Continental and Carter 15-48 Wasson, elev. 3,547 ft., flowed 375 bbl. after acid, pay 4,880 ft., T.D. 4,967 ft.

Humble 19 Randall, elev. 3,640 ft., flowed 483 bbl. through ¾-in. tubing choke after acid, pay 5,100 ft., T.D. 5,116 ft.

TEXAS PANHANDLE COMPLETIONS

Gray County: Moran Brothers 3 Davidson, Sec. 65, Blk. B-2, H.&G.N. Sur., pumped 121 bbl., shot 2,925-59 ft., pay 2,930-62 ft., T.D. 3,086 ft.

Skelly 10 Lovett, Sec. 36, Blk. B-2, H.&G.N. Sur., pumped 255 bbl., pay 2,930-62 ft., shot, T.D. 2,962 ft.

Texas 5 Jackson, Sec. 94, Blk. B-2, H.&G.N. Sur., pumped 186 bbl., pay 2,930-3,044 ft., shot, T.D. 3,044 ft.

Hutchinson County: J. M. Huber, Inc., 8 Bryan, Sec. 2, Blk. M-24, T.C.R.R. Sur., 408 bbl. natural, pay 3,189-3,230 ft., T.D. 3,230 ft.

Dave Rubin 3-B Merchant-B, Sec. 38, Blk. 47, H.& T.C. Sur., pumped 30 bbl. oil and 30 bbl. water, pay 2,826-44 ft., acid, T.D.

Wildcat Test Staked Southwest of Shugart

HOBBS, N. M.—Eddy County claimed the interest of New Mexico oil operators last week when it was announced that Yates & Stroup will drill a wildcat in that county 3½ miles south and west of nearest production in the Shugart area and slightly farther northeast of the Barber pool. The new test is the 1 Koonce, and has been staked 1,980 ft. from the north and west lines of 21-19s-31e.

A closely watched wildcat 7 miles west of Tatum in north central Lea County, Mascho Oil and American Drilling 1 Tide Water-State, NE 18-12s-35e, is shut down for repairs after reaching 3,982 ft. in anhydrite and sand. No. 1 Tide Water-State is reported to be running about 83 ft. higher than the old Buell & Hagan 1 State, several miles northeast, which quit short of the porous zone.

SOUTHEAST NEW MEXICO COMPLETIONS

Lea County

Maljamar: Maljamar Oil & Gas 7-B Mitchell, NW SW 20-17-32, flowed 180 bbl. natural, 38 gravity, pay 3,715 ft., T.D. 3,788 ft.

Carper Drlg. 3-R Simon, NW NW 30-17-32, abandoned location.

A. H. Hover 4 State, SW NE 32-17-32, flowed 160

(Continued on Page 81)

NORTH CENTRAL TEXAS

Second Producer Indicated In Turner Area

By D. H. STORMONT

FORT WORTH, Tex.—A second producer for the Turner area of Montague County, 6 miles north of Bowie, was indicated last week at Continental Oil Co. 1 Penn, A. E. Topper Survey. On a 20-minute drill-stem test at 6,281-87 ft., a conglomerate section, the well recovered 100 ft. of free oil and 55 ft. of oil-cut mud, with 300,000 cu. ft. of gas. Casing was being set at 6,287 ft. The well is a southeast offset to the Gant discovery.

Six miles east of Montague, Sinclair Prairie 1 Collier, Collier Survey, was coring after a 30-minute test on sandy conglomerate section at 6,339-51 ft. returned 30 ft. of mud cut slightly with oil and gas. The same company's 1 I. M. Jones, Singletary Survey, 1 mile northeast of Forestburg, topped lime at 7,173 ft. and found broken shows to 7,196 ft. A 30-minute test was run at that depth with the packer set at 7,184 ft., and 180 ft. of mud cut with oil and gas was recovered.

In the Stoneburg area, Continental 1 Drummond, Section 4, Limestone County School Land Survey, was at 6,209 ft. with drill pipe stuck, and Continental 1 Mueller, a wildcat east of Bowie, was delayed by stuck drill pipe at 6,148 ft.

Southeast Young County Test

Henry Zweifel, Fort Worth, last week staked location for a 4,250-ft. wildcat in southeastern Young County, the first to be drilled in its immediate vicinity for 3 years. The location will be in the W. E. Steele farm, northwest part of the John C. Van Hooser Survey. It is ¾ mile west of the Young-Jack County line, and is 2 miles east of the southeast end of the three-pay Sewell pool which Mr. Zweifel discovered 5 years ago. The contract is expected to take the well into the Marble Falls zone.

Clay County Wildcats

Continental Oil Co. was drilling past 3,870 ft. at 2 Earl Spring, Section 23-4, H.&T.C. Survey, a 6,000-ft. test seeking a ¼-mile northeast extension to the 5,600-ft. Caddo lime discovery it brought in last December in northeastern Clay County.

In south central Clay County, J. S. Bridwell was making hole at 5,085 ft. in hard shale at 3 Viola Myers, C. Thompson Survey. It is 2,540 ft. from 1 Myers, brought in last month by Bridwell from the Caddo at 5,800 ft.

NORTH CENTRAL TEXAS COMPLETIONS

Wildcats

Archer County: Young, Kimbell & Bohner 1 C. L. Abercrombie, 1,170 ft. west and 1,470 ft. north of SE Sec. 109, Harris Subdivision, 4 mi. southwest of Archer City, dry, Gunsite Lime 1,354-60 ft., T.D. 1,397 ft.

Baylor County: Tom L. Sessions I Lou Howe, 660 ft. south and east of NW cor. E. Irish Sur., A-727, 15 mi. southeast of Seymour, dry, dry sandy shale 1,660-79 ft., T.D. 1,801 ft.

Fields

Briar Creek, Young County: Anzac Oil 1 I. H. Gathright, Sec. 2,933, T. E. & L. Sur., 6 mi. west of Graham, dry, T.D. 2,897 ft.

Burns-Larimore, Young County: L. T. Burns 4 E. J. Larimore-A, Sec. 150, T.E.&L. Sur. A-397, dry, T.D. 3,361 ft.

Clay County: F. P. Cullum 1 H. D. Stine, Sec. 25, H.&T.C. Sur. A-248, old well worked over, T.D. 5,807 ft., acid, dry.

Roy Lee, Tr. 1 H. Watson, W. A. Farris Sur. A-148, flowed 88 bbl. in 3 hr. through ¼-in. tubing choke, natural, est. 450 bbl., C.P. 450 lb., T.P. 380-235 lb., gravity 43, top Caddo 5,198 ft., pay 5,460-80 ft., T.D. 5,484 ft., *discovery.*

Consolidated, Wilbarger County: Consolidated Oil 2-E E. M. Barnes-K, 1,980 ft. south and 660 ft. east of NW Sec. 11, H. & T. C. Sur., Blk. 7, pumped 224 bbl. oil and 60 bbl. water, dolomite showing oil 4,278-4,469 ft., T.D. 4,469 ft.

Cooke County: John Gray et al 1 C. M. Greek, S. Willis Sur. A-1120, dry, T.D. 3,005 ft.

Halsell, Clay County: Bridwell Oil 4 Furd Halsell-A, Sec. 17, W.C.R.R. Co. Sur. 720, old well, dry, T.D. 6,042 ft.

Harrold, Wilbarger County: Big Six Oil 2 James H. Orr, Sec. 2, Blk. 14, H.&T.D. Sur., pumped and flowed 88 bbl. oil and 35 bbl. water, pay in lime 3,296-3,306 ft., T.D. 3,382 ft.

Iowa Park (shallow), Wichita County: C. W. Clark 1 Munger Brothers, 1,000 ft. east and 1,100 ft. south of NW Blk. 30, K.W.V.F.L. Sur., pumped 100 bbl., oil sand 1,490-93 ft., T.D. 1,737 ft.

Kadane-Griffin, Archer County: K. & G. Production 3 E. P. Griffin et al-D, 1,320 ft. from south line and 330 ft. from east line W½ Sec. 14, P.P.C.S.L. Sur., A-339, flowed 462 bbl., oil sand 4,337-68 ft., T.D. 4,368 ft.

K.M.A., Wichita County: W. H. Hammon 18 Hammon, Sec. 2, E.T.R.R. Sur. A-762, dry, T.D. 601 ft.

Hanlon-Buchanan 1-A Will Burnett-D, M. W. Williams Sur. A-335, dry, Ellenburger 4,610 ft., T.D. 5,995 ft.

Knight, Young County: Tex-Tor Oil & J. McLester 6 L. Moseley, 467 ft. from west line and 2,200 ft. from north line of most northerly NW lines of B. Moseley Sur., A-222, 2 mi. south of Graham, flowed 965 bbl., 43 gravity, lime pay 3,744-91 ft., T.D. 3,846 ft.

Ringgold, Montague County: Gulf 3 C. M. Worsham est., Sec. 33, H. & T. C. Sur., Blk. 4, 3 mi. southeast of Ringgold, pumped 2⅝ bbl. oil and 16½ bbl. water, limy conglomerate 5,752-5,999 ft., T.D. 5,999 ft.

Scotland, Archer County: Shell 2-C W. M. Coleman-B, Sec. 1, Blk. 74, A.T.N.C.L. Sur., flowed 368 bbl.

(Continued on Page 80)

EASTERN TEXAS FIELDS

Kildare, Cass County, Pool Opener Placed on Production

By ROBERT INGRAM

DALLAS, Tex.—Purchasers lost no time in getting a connection to the Kildare discovery in southern Cass County last week. The Gulf Pipe Line Co. laid a 3-mile line from its Marion County carrier to the discovery well, the John Messenger et al 1 Benefield & Singleton, Wanhope Survey, and by midweek was taking daily runs. The new pool is about 3 miles north of production in the Lodi sector of the Rodessa field.

Mr. Messenger was given special tender to move 1,000 bbl. of oil, the amount stored in lease tankage when the well first came in, and he made application with the Railroad Commission for hearing on field rules, allowables and other regulations. Gulf's connection was a temporary 2½-in. line, to be replaced, the company said, by a 4-in. carrier if sufficient production is developed.

The discovery was completed for 210 bbl. a day natural through perforations at 5,992-6,010 ft. in the Gloyd zone, but the well was probably pinched pending the hearing. It was also probable that no new drilling would start until the hearing was held, although C. C. Gigler of Houston, contractor and part owner of the discovery, had moved his rig north to the Grogan Manufacturing Co. lease, Watson Survey, and was rigging up. Neither the Phillips Petroleum Co. nor the Texas Co., both holding offset acreage, had indicated whether it would drill immediately.

Wildcatting Slow

Notable both at the Kildare discovery and in the surrounding area last week was the absence of the usual play following a strike. Reason apparently was the gloom which held back wildcatting throughout the entire East Texas district. Old timers said there was less exploratory drilling than at any other time since the discovery of the East Texas field.

OUTPOSTS STAKED

Anderson County: Magnolia Petroleum Co. 1 W. C. Campbell, Jesse B. McNelly Sur., a Woodbine sand test to be carried to the Georgetown lime, in the Concord area.

Cherokee County: Humble Oil & Refining 1 H. F. Curtis, 860 ft. from the west line and 660 ft. from north line of 92-acre lease, John Vaughn Sur., ½ mile northeast of the Bobby Manziel 1 Limberlog School-Humble, a dry hole, and two other failures drilled by Manziel, all to less than 5,500 ft. Humble's test is to go to 10,000 ft., the deepest test ever drilled in the area, on the basis of geophysical information.

Madison County: Leon Dunn et al 1 Farmers State Bank, 667 ft. south and west of the NW of J. I. Straight Sur. but in the Enoch Latham Sur., a Wilcox sand test.

Chapel Hill East Well

A potential gage of 172 bbl. a day through ½-in. choke was reported for C. R. Starnes 1 Jackson, L. H. Dillard Survey, to extend Petit lime oil pay 1 mile east in the north central part of the Chapel Hill field, Smith County. The well showed a lack of pressure, however, with casing pressure dropping from 850 lb. to 375 lb. during the gage, and tubing pressure from 225 lb. to 10 lb. Ratio was 284:1. Pay was through perforations at 8,238-62 ft., at 8,274-78 ft. and at 8,288-8,320 ft. The lime was treated with 4,000 gal. of acid.

EAST TEXAS COMPLETIONS

Wildcats

Hunt County: J. B. and Ed V. Parson 1 O. P. Marshall, D. Ausmus Sur., dry, T.D. 5,010 ft.

Navarro County: R. F. Briggs 1 Houston Oil Co., J. Peoples Sur., pumped 4 bbl., Wolfe City 1,116 ft., T.D. 1,136 ft., *discovery.*

Fields

Chalk Hill, Rusk County: Kangerga 1 Hamilton & Thrasher, F. Castro Sur., dry, T.D. 4,608 ft.

Hawkins, Wood County: Humble 9-D B. F. Allen, E. Wideman Sur., flowed 101.52 bbl. in 8 hr. through ¼-in. choke, Nacogdoches 2,332 ft., Pecan Gap 3,127 ft., Austin Chalk 4,292 ft., Woodbine 4,582 ft., T.D. 4,816 ft.

Humble 5 M. A. Kay, flowed 109.58 bbl. in 6 hr. through ¼-in. choke, Austin Chalk 3,892 ft., Woodbine 4,096 ft., pay 4,448 ft., T.D. 4,696 ft.

Humble 2 H. C. La Force, W. Parker Sur., flowed 109.46 bbl. in 6 hr. through ¼-in. choke, pay 4,524-64 ft., Austin Chalk 3,903 ft., Woodbine 4,124 ft., T.D. 4,626 ft.

Humble 7 T.&P. R.R., George Brewer Sur., pumped 85.48 bbl. in 6 hr., Austin Chalk 4,325 ft., Woodbine 4,578 ft., T.D. 4,801 ft.

Humble 4 F. K. Williams, B. M. Hampton Sur., flowed 109 bbl. in 6 hr., pay 4,523-29 ft., T.D. 4,636 ft.

Van, Van Zandt County: G.M.H. Oil 2 P. E. Neill, Nacogdoches County School Land Sur., dry, Nacogdoches 1,197 ft., T.D. 1,275 ft.

Pure 7 A. W. Ellison-67, James Rose Sur., flowed 672 bbl. through ¼-in. choke, pay 2,958-66 ft., T.D. 3,041 ft.

New Los Angeles Basin Field Opened at Buena Park

By L. P. STOCKMAN

LOS ANGELES, Calif.—Texas Co. has concluded drilling operations on 1 Spencer in the Buena Park district of Orange County and with this wildcat officially completed the company has opened a new oil field in Los Angeles Basin. Texas Co. has been working on this wildcat for several weeks and finally succeeded in getting a satisfactory water shutoff. The discovery well at Buena Park is at present flowing 90 bbl. of 25-gravity oil cutting 1 per cent through a 32/64-in. bean from a total depth of 9,660 ft. but an effective depth of 8,980 ft. This wildcat did not show very much gas and for this reason production of crude oil is relatively small. The results of a series of tests indicate that this wildcat is probably an edge well and consequently as the company moves up structure production conditions should prove more favorable. Three possible productive intervals were found during the course of work and although two of these intervals tested wet they might be found commercially productive at a position structurally higher. The discovery well was drilled to 9,660 ft. and a 5½-in. string of casing cemented on bottom. The hole was then cleaned out to 9,600 ft. and a formation test at 9,500-9,600 ft. yielded water and a small amount of 15-gravity oil. A test was then made at 9,551-80 ft. but when this was found wet the hole was plugged back to 9,472 ft. Tests of intervals at 9,210-25 ft., 9,250-80 ft. and 9,271-80 ft. proved the formation wet and the hole was plugged back to 9,179 ft. The hole was then cleaned out to 9,000 ft. and the 5½-in. gun perforated at 8,900-32 ft. from which point the well flowed 65 bbl. of 20.7-gravity oil cutting 45 per cent water. Another plug was put in and the hole cleaned out to 8,960 ft. after water entry had been found at 9,132 ft. A formation test at 8,740-64 ft. yielded a flow of 79 bbl. of 21.4-gravity oil in 23 hours but the water cut remained at 46 to 48 per cent. An effective plug at 8,960 ft. successfully excluded the water and reduced the cut to 1 per cent.

Texas' discovery well is located in 1-4s-11w about 4 miles south of the West Coyote field and approximately 8 miles northwest of the town of Santa Ana. Work was started following a comprehensive geophysical survey and considerable interpretive work from the logs of numerous surrounding wells that failed to find the pay. Structural conditions are not definitely known but it is believed that 1 Spencer is producing from a position far down on the dip of a westerly plunging anticlinal nose which may or may not contain an over lap. Texas has a block of about 4,250 acres in this area and since 1 Spencer is located at the west end of the block it is quite obvious that the next location will be east of the discovery well. This conforms with general expectations because a well east of the discovery should be higher structurally and therefore more productive. The Buena Park field is located rather well out in the center of the basin and may lead to additional prospect work in this general area.

New Well Staked West of West Coyote

It is interesting to note in this connection that Texas Co. has already staked location for 2 McNally at La Miranda in 15-3s-11w. This is about 6 miles northwest of 1 Spencer and is designed to determine the existence or absence of a new producing area about 3 miles due west of the West Coyote field. If the axis of the West Coyote field were projected westward it would very nearly pass through the location selected for 2 McNally. For this reason and also because of its location with respect to Buena Park and Santa Fe Springs to the northwest, the La Mirada area in which 2 McNally is located appears to have considerable merit. The oil produced by 1 Spencer at Buena Park is rather heavy but this might change with more gas available nearer the apex of the structure. At La Mirada any oil secured should be of a light refinable grade if production is secured in the Miocene in a normal closed structure. There is a possibility of getting Pliocene production at La Mirada but it is believed the area will require deep drilling which would ordinarily mean an attempt to reach and develop commercial production in the Miocene.

The real significance of 1 Spencer remains to be seen as the result of additional drilling as this well is probably an edge well at best and does not reflect the possible potentiality of the Buena Park structure. It is important to note, however, that Buena Park and Turnbull Canyon are the first fields found in Los Angeles Basin in several years inasmuch as the Newhall-Castaic region is segregated into the coastal district region. The Turnbull Canyon field was found a few months ago and recent drilling indicates the probability that the area will be quite productive although smaller in areal extent than originally anticipated. The first well at Turnbull Canyon required artificial stimulation to show production and was accordingly brought in on the beam. The second well showed a natural flow and likewise proved up the existence of a fault that dominated the southern limits of production.

Wildcat Location Staked West of Whittier

In the Whittier district of Los Angeles Basin, R. S. Lytle is preparing to drill a wildcat in 15-2s-11w on property acquired under lease from the Central Oil Co. This projected wildcat is located between the West Whittier or Rideout Heights section and the old Whittier field. This will be a deep test on a 640-acre block and may have to be drilled to at least 7,000 ft. for a deep conclusive test if the results of drilling in the area are any criterion of what may be expected. This wildcat will be about 2 miles from present production in the Turnbull Canyon field.

LOS ANGELES BASIN COMPLETIONS

Buena Park, Orange County: Texas Co. 1 Spencer, 1-4s-11w, flowed 90 bbl., 25-gravity, 1 per cent cut, very little gas, 32/64-in. bean, pressures 50/75 lb., T.D. 9,660 ft., P.B. 8,980 ft. Discovery well in new California oil field.

Torrance, Los Angeles County: Silver Petroleum Co. 1 Girtin, 30-4s-13w, pumped 152 bbl., 17.1-gravity, 3 per cent cut, T.D. 3,740 ft., gravel-packed perf. 3,028-65 ft., 3,110-3,203 ft., 3,260-3,350 ft., 3,500-3,640 ft., 3,709-40 ft., completed in equivalent of Ranger zone.

Wilmington, Los Angeles County: McDonald & Burns 1 Banning, 32-4s-13w, pumped 175 bbl. 13.3-gravity, 5 per cent cut, T.D. 3,619 ft., gravel-packed perf. 2,677-2,848 ft., 2,919-3,165 ft., 3,335-3,617 ft., recompleted in Ranger zone after setting whipstock 2,685 ft. and redrilling to completion depth.

Newhall-Potrero Outpost Makes Good Well

The most important development in the coastal district this week was the completion of 1 Ferguson of C. G. Willis and associates about 1 mile southeast of the Newhall-Potrero field in northwestern Los Angeles County. This new producer was brought in flowing 265 bbl. of 33.7-gravity oil, cutting 0.5 per cent, and 200,000 cu. ft. of gas per day from a total depth of 7,519 ft. but an effective depth of 7,020 ft. The completion of this wildcat is believed to have extended the productive limits of the Newhall-Potrero field about 1 mile southeast from the nearest producing well of Barnsdall Oil Co. on the Rancho San Francisco property.

For several years engineers have been of the opinion that the fault located south of Barnsdall's production marked the outer limits of production by cutting across the structure. In order to test out the theory that the fault does not segregate the Newhall-Potrero field from the new productive area developed to the southeast by Willis and associates, drilling operations have already been started on a well definitely known to be located south of the fault.

There appears to be a possibility that there will be a marked unconformity in the area between present production because 1 Ferguson found the third Modelo zone of Miocene age wet and an insufficient natural gas in the second Modelo zone to result in a natural flow. The operator, in order to correct this condition, perforated opposite the gas sand in the first Modelo zone to get sufficient natural gas to start 1 Ferguson flowing. This gas from the first Modelo zone is flowed down through the annular space between casing and tubing and up through tubing with the oil of the second Modelo zone. Without the gas from the first Modelo zone the well was good for about 100 bbl. per day so it can be seen that the introduction of natural gas has more than doubled production. With the plug set at 7,020 ft. in 1 Ferguson and 7-in. casing cemented at 6,857 ft. it will be noted the well is producing from 153 ft. of formation. Ordinarily a zone of this thickness contains enough natural gas to show a lot of kick but in this case the amount of sand present did not extend through the entire interval and was considered fairly hard and with not too favorable porosity. This is fairly common in this section of the state, although in some fields in the locality the porosity and permeability are high.

Tide Water Associated Oil Co. has found some oil sand of yet undetermined potentiality in 1 Mission, an outpost in the Aliso Canyon field of Los Angeles County but which is grouped in the Newhall-Castaic coastal district, and preparations are under way to make an early production test. If this well results in commercial production it will greatly extend the Aliso Canyon field or add another new productive area to the list of fields in the coastal district. The formation at 9,291 ft is a hard gray sand showing oil.

COASTAL DISTRICT COMPLETIONS

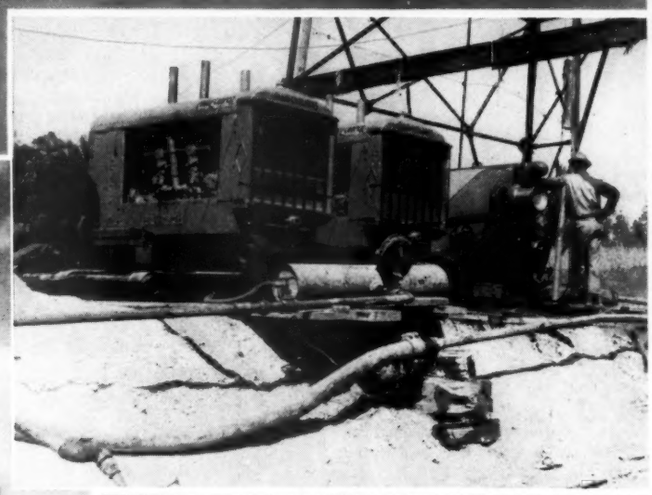
Carpinteria wildcat district, Santa Barbara County: Century Oil Co. 1 Hall, 34-4n-25w, dry at 712 ft., perf. 618-703 ft., bailed mud, water and a show of tar on production test.

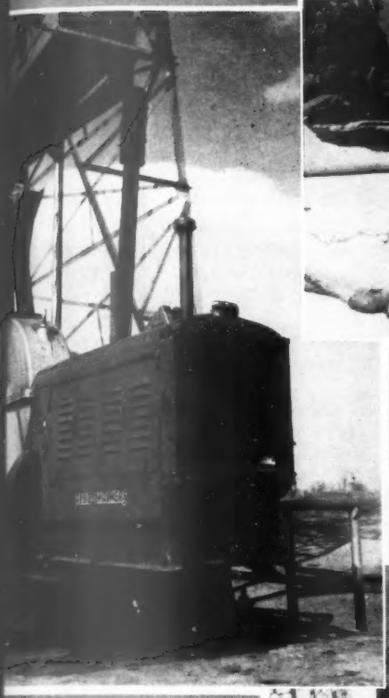
Newhall-Potrero, Los Angeles County: C. G. Willis and associates 1 Ferguson, 36-4n-17w, flowed 265 bbl., 33.7-gravity, 0.5 per cent cut, 200,000 cu. ft. gas, T.D. 7,519 ft., P.B. 7,020 ft., third Modelo zone of Miocene age contained gray sand and looked wet, completed in second Modelo zone with natural gas from first Modelo zone, believed to be located on Newhall-Potrero structure 1 mile southeast of nearest production.

Jasmine Test Cores Thick Oil Sand

Wilshire-Annex Oil Co. has cored 52 ft. of fairly good looking oil sand in 1 Amalgamated at Jasmine in 17-25s-28e and casing has been ce-

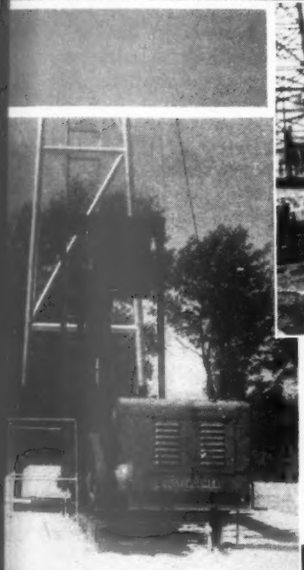
(Continued on Page 80)





Above: Two Model L Engines. 590 ft. lbs. torque, driving mud pump and rotary draw works, in South Texas.

Left: Model E Engine. 400 ft. lbs. torque on geared pumping unit. Natural gas fuel. On deep Oklahoma well.



Above: Model U Engine. 200 ft. lbs. torque. Using natural gas for fuel on pumping well in California.

Left: Model W Engine. 128 ft. lbs. torque. Pumping 250 bbls. per day.

Below: Model B Engine. 74 ft. lbs. torque. Pumping 2600' well through 2" tubing with ⅝" rods.

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TEXAS GULF COAST

Yegua Sand Produces in Aldine Area Test

By F. L. SINGLETON

HOUSTON, Tex.—New production was opened in the Aldine area, Harris County with the completion of Strake 1 Phoenix Dairy Co., which is flowing at the rate of 60 bbl. of oil and 40 bbl. of salt water per day through a $\frac{3}{16}$-in choke. Tubing pressure was 1,500 lb. The well was drilled to a total depth of 7,791 ft., and production is from perforated casing opposite the Yegua sand at 7,186-93 ft. The well will be allowed to flow for several days and if the salt water increases, it is expected to be killed and retested in a higher sand, still in the Yegua formation, topped at 6,642 ft. While the well is located about 6,000 ft. southwest of the discovery well of the North Aldine field, it is believed to be the discovery of a new field, in view of the faulted nature of the area. It is producing from a deeper sand than that of the field proper which is approximately 6,600-6,800 ft. Location is in the Peter Craft Survey.

Gas-Distillate Production Reopened in Brazoria County

Gas-distillate production was being reopened on the Bailey Prairie prospect, Brazoria County as Glenn H. McCarthy 1 Munson, was flowing an unestimated amount of distillate and wash water while testing through a ¼-in. choke. Tubing pressure was 1,100 lb. Total depth of the well is 11,530, ft., where 5½-in. casing was cemented and production is from perforated casing at an unknown depth since details of the completion have not been released by the operator. The well is located in the H. T. & B. Survey 1, several hundred feet from the operator's 1 W. B. Munson, completed in November, 1940, at 11,615 ft. for a gas-distillate producer. However, production was short lived, and the well was temporarily abandoned. In view of the fact that geological markers are not available, the well cannot be correlated with the first test, but the producing sand is believed to be around 11,300 ft., which would make the well structurally higher than the first well.

Needville Extension Indicated

An extension to the new Needville field, Fort Bend County was indicated as preparations were being made to test W. L. Goldston 1 W. F. Lehman, Robert Hodge Survey. A 15-min. drill-stem test at 5,185-96 ft., tested 34 lb. working pressure and recovered 500 ft. of oil and 150 ft. of mud and salt water. Total depth is 5,400 ft., with 5½-in. casing cemented below 5,200 ft.

Wilcox sand production in the new Camp Eleven field, Tyler County was extended several hundred feet to the northwest with the completion of American Republics et al 2 Cushing fee, which is flowing at the rate of 25 bbl. of oil per hour through a ¼-in. choke after perforating casing opposite sand at 7,997-8,007 ft. Based on top of the producing depth, the well is slightly higher than the discovery well.

To the south, and located in the Fred field, Stanolind 2 Parker, an east offset to the discovery well is drilling below 8,700 ft. in an attempt to open production of a deeper sand in the Wilcox sand. The discovery well was completed in sand at 8,180-8,200 ft., and this sand is reported to have been topped about flat in the second well. Sand showing possibilities is reported to have been topped at 8,611 ft., and was cored to 8,620 ft. where a drill stem test showed possible production.

Gulf 1 F. F. Wells located in the Texana area, Jackson County was preparing to retest after recovering salt water with a trace of gas at 7,614-21 ft. In the same area, Moore and Ahern were moving in material of 1 Clements, located in the S. F. Austin Survey, while 1 mile southeast of the Mauritz field, J. B. Coffee et al were scheduled to move in for T. N. Mauritz in the Morris & Cummings Survey 21.

TEXAS GULF COAST COMPLETIONS

Wildcats

Jefferson County: E. C. Hankamer 1 Robertson, dry at 9,080 ft.

Fields

Blue Ridge, Fort Bend County: Mills Bennett 1 Lusher, dry at 7,979 ft.

Fig Ridge, Chambers County: C. M. & V. W. Frost 1 fee, 171 bbl., ⅛-in. choke, perf. casing 8,511-135 ft., T.D. 8,586 ft.

Texas 6 Broussard, 352 bbl., 12 hr., ¼-in. choke, perf. casing 8,573-86 ft., T.D. 8,600 ft.

(Continued on Page 76)

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SOUTHWEST TEXAS

Two Frio-Vicksburg Fields Opened in Southern Sector

By F. L. SINGLETON

CORPUS CHRISTI, Tex.—The Southwest Texas district gained two new oil fields the past week, both being located on the Frio-Vicksburg trend in Starr and Jim Wells counties. In the meantime, casing was expected to be cemented on a wildcat in Refugio County following a drill-stem test that recovered several hundred feet of pipe-line oil.

The discovery in Starr County was opened by the completion of Sun 1-A Garcia Land & Cattle Co., which is flowing at the rate of 179 bbl. per day through a 5/32-in. choke. Tubing pressure was 760 lb., and casing pressure 670 lb. Total depth of the well is 4,076 ft., and production is from perforated casing opposite oil sand at 3,748-53 ft. The new strike is located in Ygnacio Trevino grant, Porcion 97, about 5½ miles northwest of the Sam Fordyce field and 3½ miles southwest of the Yturria field. With the completion of the well, the rig is being moved 1,320 ft. due west for 1-A Garcia Land & Livestock Co. Sun Oil Co. has been engaged in an extensive wildcatting program in this area for the past several months, and has several discoveries to its credit. At the present time the company has three other wildcats drilling. Three miles north of the Sun field, 1-A La Sal Colorado grant is drilling in shale below 5,308 ft., while 2 miles west of the same field, 1 Saenz is drilling in sandy shale below 6,360 ft. Two miles south of the Rincon field, 1 Frost National Bank was spudded during the week.

In Jim Wells County, and located 3 miles southwest of the Springfield townsite, Bruce Baster 1 Koopman reperforated casing at 4,115-22 ft., and is flowing at the rate of 85 bbl. of 38.6-gravity oil daily through a 5/32-in. choke. Tubing pressure was 300 lb., and shut-in casing pressure 595 lb. There was no showing of salt water. Two miles southeast of Orange Grove, Plymouth 1 J. J. Kuck is shut in after testing 300,000 cu. ft. of gas and an unestimated amount of distillate. This well was drilled to a total depth of 5,828 ft., and was completed through perforated casing at 5,079-85 ft.

North Limit Defined at Seeligson

The northern limits of the active Seeligson field, Jim Wells County, were defined with the abandonment of Magnolia 28 Seeligson. With the hole bottomed at 7,461 ft., tests were made by gun perforating at 6,081-83 ft., 5,570-72 ft., and 5,644-47 ft., but all recovered mud or salt water.

Operators interested in development of the Agua Dulce-Stratton field, Nueces County, centered their attention on Humble 1 King ranch-Arroyo, located about 1 mile west of the field across the county line in Jim Wells County, which is making a series of production tests. Total depth of the well is 7,202 ft., with 5½-in. casing cemented at 6,471 ft. At the close of the week the well was swabbing salt water and some oil from perforated casing at 6,382-90 ft. In the same area the same company's 2 King ranch-Arroyo is drilling in shale below 6,725 ft. Sandy shale with slight shows of oil or gas was logged at intervals from 6,403-40 ft.

Dead Oil Show Reported at Prospective Pool Opener

Crown Central et al 1 J. Y. Womack, reported the previous week as a possible pool opener, 5 miles east of the Driscoll townsite, Nueces County, is shut down for orders following a production test at 6,276-86 ft. which recovered 250 ft. of drilling mud cut with dead oil and 1,500 ft. of salt water. The well was drilled to a total depth of 7,510 ft., and 5½-in. casing was cemented at 6,355 ft., following an electrical survey and sidewall cores which showed possible production in a 12-ft. sand section at 6,276-88 ft. In the meantime, preparations were being made to drill two new wildcats in the county. Seaboard Oil Co. is preparing to spud 1 Lehman, located 5 miles east of the Petronilla field in the El Rincon De Corpus Christi Survey, while 2 miles southwest of Clarkwood, material is being moved in for L. A. Douglas and Republic Natural Gas Co. 1 M. G. Allen, in the J. H. Smith Survey.

Refugio Wildcat Recovers Good Oil Show

Hewitt & Dougherty 6-A Rooke, a wildcat located in the J. M. Aldrite Survey, Block 28, about 4 miles southwest of the La Rosa field, Refugio County, is bottomed at 7,281 ft., and casing is expected to be cemented for testing following a 15-minute drill-stem test at 7,134-39 ft. which tested

(Continued on Page 85)

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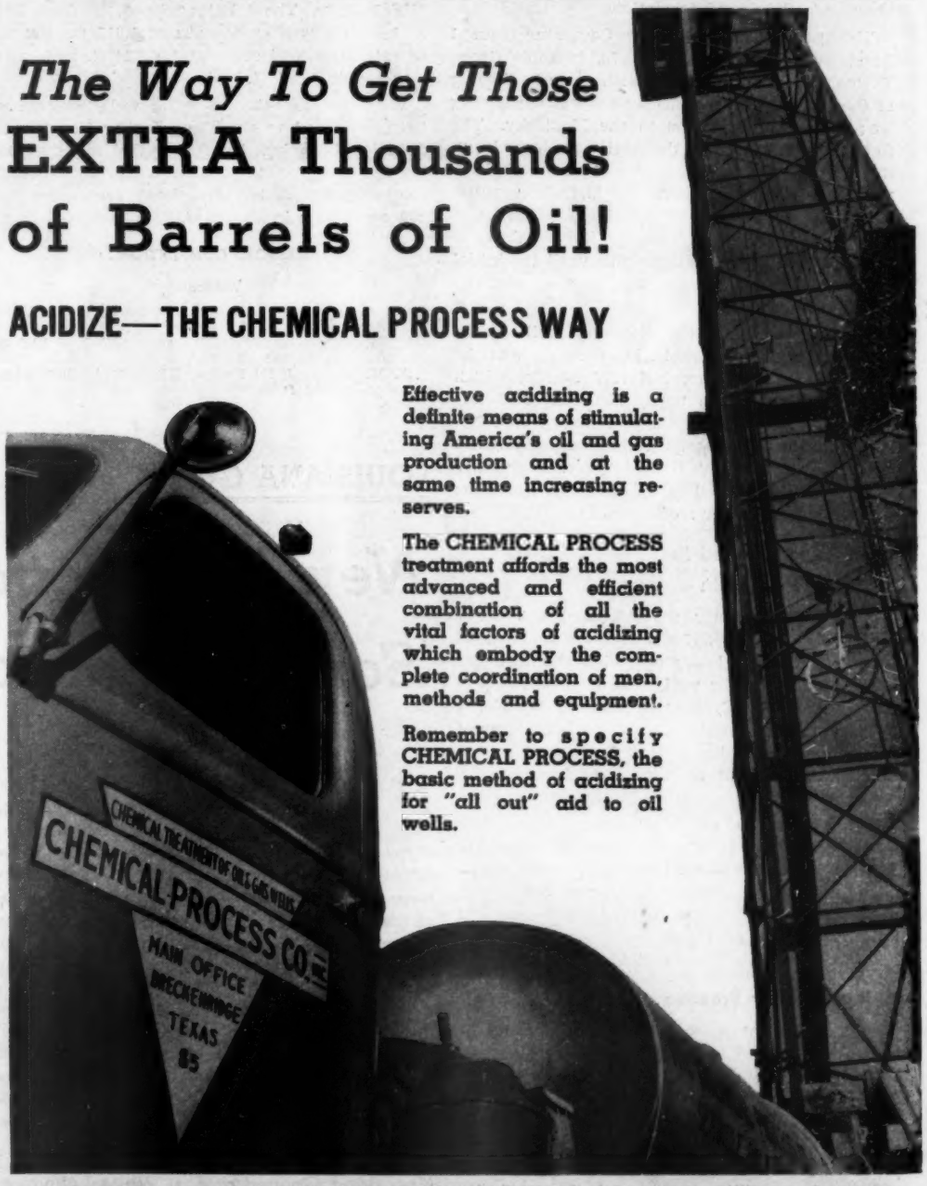

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ILLINOIS FIELD REPORT

McClosky Runs Low in Offset To Bible Grove Discovery

MATTOON, Ill. — Illinois oil-field operations registered a slight gain last week, the first time there has been an increase since a steady decline set in during December. Interest of the operators in the state, however, centered principally on five wildcat wells, one of which opened a new pool in Clay County. Two of the tests were making oil and water in production tests while the remaining two had encountered promising shows of oil in sand formations.

The pool opener was the Cameron Bros. 1 Landwehr, NW NW NE 8-5n-7e, in Bible Grove Township of Clay County, which came in flowing at the rate of 1,100 bbl. a day natural when plug was drilled to saturation in the McClosky. The flow stopped but when the well was cleaned out, it began to flow a second time at the rate of approximately 700 bbl. daily. The McClosky saturation was encountered at 2,810-17 ft. There was also a show in the Cypress but it is doubtful if the operators will investigate this until the initial burst of production from the lime is partially exhausted.

The first offset to the discovery well loomed considerably less favorable, however. It was the Pure 1-A C. D. Grahn, NE NW 8-5n-7e, which found nothing in the upper McClosky and was deepened to 2,882 ft. for a preliminary test. No. 1-A Grahn is also reported to be running slightly lower structurally than the discovery. Four other tests have been staked in the area but work has not yet started on any of them.

New Pools Opened in White and Franklin

In Franklin County the Seaboard Oil Co. 1 U. S. Coal & Coke, SW SE 14-6s-4e, swabbed 68 bbl. of fluid in 17 hours of which about 15 per cent was water. The well, a pool opener, is producing from the Cypress at 2,839-55 ft. No. 1 U. S. Coal & Coke is about 6 miles west of nearest production in the Rural Hill field of Hamilton County and is about 10 miles east of the nearest Franklin County production in the Benton pool.

Meanwhile, the same company's prospective pool opener in White County, 1 Henry Gates, SW NW SW 3-5s-9e, swabbed 67 bbl. of oil and a slight amount of water in a 24-hour test of the Aux Vases sand 3,227-39 ft. The discovery is 2 miles northwest of Carmi and approximately 7 miles north of the Storms field.

Wildcats Show Promise

Most important new wildcat developments of the week included the recovery of saturation in Pure 1 Arthur Grabb, W½ SW NE 36-3n-8e, Richland County, and in the First National Petroleum Trust 1 J. W. Ellis, SW NE 18-1s-5e, Wayne County.

Pure's test encountered saturation in the Cypress and is drilling on toward the McClosky lime. The well will probably be tested in the Cypress if no saturation is encountered in the McClosky.

The J. W. Ellis is preparing to test the Aux Vases sand at 2,909-45 ft., where fairly favorable saturation was encountered. During a 33-minute drill-stem test of the saturated section 780 ft. of oil rose in the hole. The test is 8 miles southwest of the Johnsonville pool.

Revival of Activity At Salem Indicated

The Salem field, once the nation's most active oil area, may be the scene of a new drilling campaign if an outpost test ½ mile southeast of production is successfully completed.

Casing has been set to Benoist saturation at the test, Big Chief Drilling Co. 1 Boles, SW SW NW 15-1n-2e. The 1 Boles topped the Glen Dean at 1,560 ft. and the Benoist at 1,915 ft. Six feet of saturation was cored at 1,918-24 ft. and casing was set at 1,914 ft.

With the exception of a few wells which have been deepened to the Devonian or Trenton the field has been inactive for several months. During the spring of 1940, when a Devonian drilling campaign was under way, there were more than 200 operations in the field.

ILLINOIS COMPLETIONS

Wildcats

Clark County: O. J. Jeffers 1 Canady, SW SW NE 1-9n-12w, dry at 550 ft.

T. M. Daniel 1 W. M. Howard, SW NW SW 36-10n-14w, dry at 535 ft.

A. M. Meyers 1 Ed Fudge, E½ NE NE 20-12n-14w, dry at 200 ft.

Coles County: C. E. Green et al 1 Pearl Link, NW NE NE 9-12n-14w, dry at 1,725 ft., Louisiana 1,280 ft., Chattanooga 1,290 ft., Devonian 1,383 ft.

Crawford County: William Krohn 1 Ed Wyman, N½ NE SE 19-8n-13w, pumped 55 bbl. oil and 75 bbl. water, perf. 1,169-79 ft., 15-qt. shot 1,160-74 ft., T.D. 2,754 ft., P.B. 1,380 ft.

Hamilton County: Cameron Bros. 1 L. Dailey, N½ NE NW 15-7s-7e, dry at 3,279 ft., Kincaid 1,852 ft., Degonia 1,999 ft., Palestine sand 2,156 ft., Menard 2,224 ft., Waltersburg 2,306 ft., Vienna 2,365 ft., Glen Dean 2,487 ft., Hardinsburg sand 2,530 ft., Golconda 2,598 ft., Barlow 2,731 ft., Cypress sand 2,752 ft., Paint Creek 2,915 ft., Benoist sand 2,965 ft., Renault 2,991 ft., Aux Vases sand 3,044 ft., Ste. Genevieve 3,083 ft., Rosiclare 3,156 ft., Fredonia 3,222 ft., McClosky 3,228 ft.

Macoupin County: W. R. Holmes 1 Stephen, NE SE NW 18-8n-8w, 500,000 cu. ft. gas, est., Pottsville 365-75 ft., Mississippian lime 390 ft., T.D. 624 ft., P.B. 400 ft.

Madison County: Alch & Carroll 1 Rinkel, SE NE NW 33-5n-6w, dry at 2,584 ft., Benoist 765 ft., Ste. Genevieve 870 ft., Chattanooga 1,704 ft., Hardin sand 1,777 ft., Devonian 1,782 ft., Trenton 2,457 ft.

Wayne County: Bell Bros. 1 E. Jones, W½ NE SE 24-1n-5e, pumped 8 bbl., acidized, McClosky 3,108-10 ft., T.D. 3,185 ft.

Williamson County: Turbeville et al 1 J. R. Spiller, E½ SE NE 7-9s-3e, dry at 2,642 ft., Menard 1,566 ft., Glen Dean 1,856 ft., Golconda 1,958 ft., Barlow 2,076 ft., Benoist sand 2,272 ft., Ste. Genevieve 2,424 ft.

Fields

Dale, Hamilton County: Texas 1 J. A. Johnson, NW NE NE 14-6s-6e, pumped 74 bbl., 30-qt. shot 3,100-14 ft., 35-qt. shot 3,100-14 ft., Aux Vases 3,085 ft., T.D. 3,124 ft.

Dupo, St. Clair County: C. H. Kryae 1 Nolte, SW SW SE 27-1n-10w, location abandoned.

East Centerville, White County: Skelly 2 Bryant, SE NE SW 7-4s-10e, pumped 109 bbl. oil and 12 bbl. water, natural, McClosky 3,218-27 ft., T.D. 3,228 ft.

Griffin, Wabash County: W. W. Gray 18-A fee, S½ NE NW NW 14-3s-14w, location abandoned.

W. W. Gray 19-A fee, N½ NE NW NW 14-3s-14w, location abandoned.

Keensburg, Wabash County: Tide Water 1 Batson, NW NW NE SW 29-2s-13w, dry, old well, P.B. from 2,481-2,051 ft.

Lancaster, Wabash County: Ayers Pet. 1 Putnam, NW

(Continued on Page 81)

LOUISIANA GULF COAST

New Production Found on South Flank of Charenton

By F. L. SINGLETON

NEW ORLEANS, La.—New production was opened on the south side of the Charenton field, St. Mary Parish with the completion of Fifteen Oil Co. 2 South Coast Corp. in 31-13s-10e. With the hole bottomed at 10,027 ft., perforations were made at 9,232-41 ft., and the well is flowing at the rate of 11 bbl. of oil per hour while testing through a 4/16-in. choke. Tubing pressure was 1,000 lb. During the early development of this structure, most of the production was produced from sands at intervals from 6,600-7,200 ft. However, later development uncovered additional production from shallow sands, and it has been from these sands that most of the development has been directed. At a recent date there were 155 producing wells in the field having a daily average production of approximately 5,000 bbl.

New Sand Opened at East White Lake

Another new producing horizon was opened in the East White Lake field. Vermilion Parish which already produces from a series of sands at intervals from approximately 6,600-10,000 ft. The latest producer, 3-A Vermilion Parish School Board, located in 16-15s-1e, was drilled to a total depth of 6,440 ft., and was completed through perforated casing at 5,950-82 ft. for an initial production of 162 bbl. daily through a 10/64-in. choke. Additional sands were also logged at intervals from 5,998 ft. to the total depth.

On the southeast flank of the old Avery Island salt dome, Iberia Parish, Humble Oil & Refining Co. was preparing to retest 1 Petit Anse Co. after salt water with a trace of gas was swabbed when tested at 6,020-55 ft. At the close of the week the well was scheduled to be retested through perforated casing at 5,880-85 ft.

Sorrento Dome Development Anticipated

Additional development was expected to be started on the northeast flank of the Sorrento dome, Ascension Parish following the completion of Pan American 20 United Lands which is flowing at the rate of 4 bbl. of oil per hour through a 5/64-in. choke from perforated casing at 4,083-87 ft. Tubing pressure was 500 lb. The sand is believed to be a new one for this old structure.

On the south side of the Bayou Sale field, St. Mary Parish, Atlantic Refining Co. was scheduled to test 3 St. Mary Parish Land Co. which may open a new producing sand for the structure. Five and one-half inch casing was cemented at 12,404 ft., and preparations were made to test a series of sands logged by an electrical survey. The main sand comes in around 10,110-150 ft.,

(Continued on Page 77)

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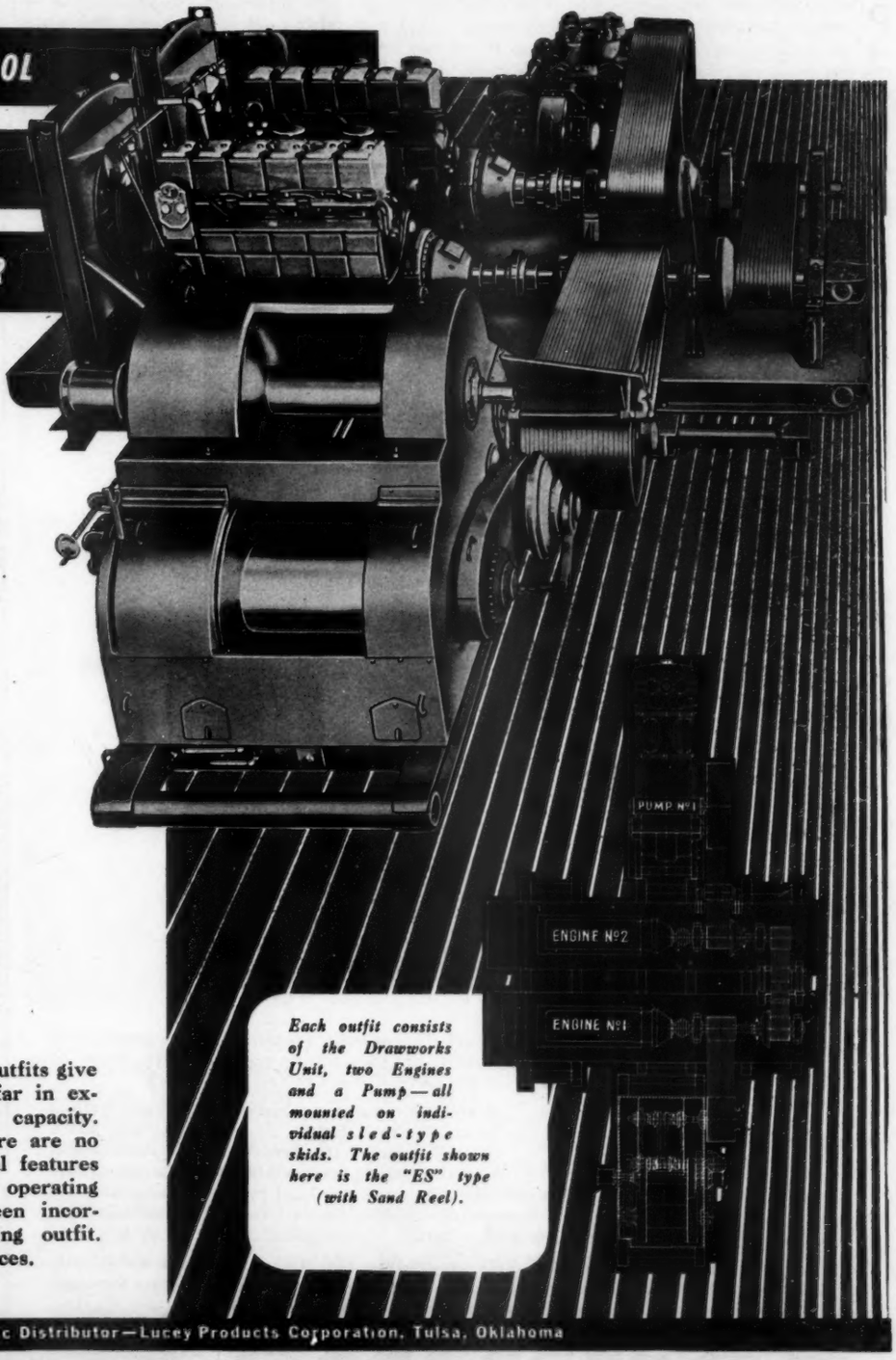

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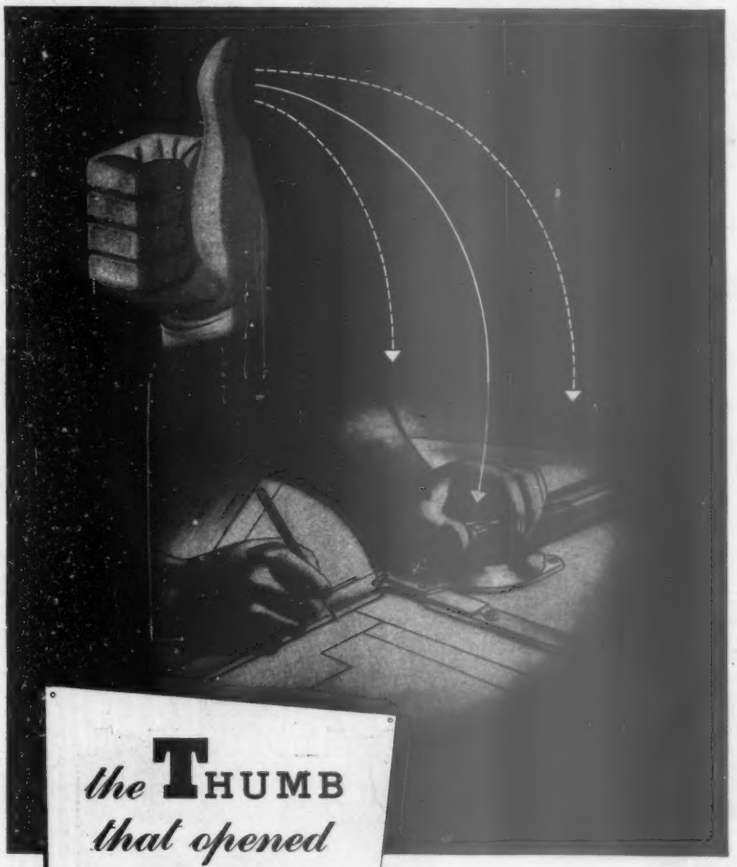
Onondaga Chert Provides Big Flow in Chestnut Ridge Well

PITTSBURGH, Pa.—During the past week, completions reached a new low for recent years and totaled only seven, of which one was dry, five gas wells, and one oil producer with a daily initial of 8 bbl. Much of the work in the area was retarded by the heavy snows of the previous week and many wells have just resumed work this week. There are reports now of approvals being received from the office of the OPC which may help the decline in drilling operations but there is a decided lag in known pools in which completions would help declining production but which cannot be drilled under existing regulations.



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SPEEDS—SIMPLIFIES—AND PROTECTS A NATION'S DRAFTING

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, New Penn Development Co., William E. Snee et al deepened the 4 Heyn (Summit Hotel) slightly before moving the derrick to another location. The top of the Onondaga chert was 6,504 ft. and at 6,528 ft., the well had a volume of over 5,000,000 cu. ft. a day which was turned in the lines and had held up well. At 6,533 ft., or only 5 ft. deeper in the chert another pay was struck which gaged 12,000,000 cu. ft. of gas and drilling stopped and the dismantling work started. This is the second highest sustained gage in any well on the structure. Here, these operators are drilling at 7,435 ft. in 1 Kirby, or 453 ft. below the top of the Tully lime. The Onondaga is expected within the next 100 ft. These operators have also rigged up to start deepening the discovery well, 1 Heyn.

Peoples Natural Gas Co. has made little progress in 4 Piedmont Coal Co. on this structure, the present depth being only 8,138 ft., or 23 ft. below the top of the Onondaga chert. The additional gas struck in 1 Piedmont Coal Co. has declined some and the well is shut in for pressure test.

On the Fayette anticline in South Huntington Township, Fayette County, Peoples Natural Gas Co. is drilling at 7,563 ft. in the deep test on the Jacobs Creek Oil Co., or 246 ft. below the top of the Onondaga lime. The Oriskany sand is as yet not reported.

On the Washington anticline in Richhill Township, Greene County, the Natural Gas Co. of West Virginia has resumed drilling the wildcat on the Andrew Workman farm and has reached 7,050 ft., or 34 ft. below the top of the Oriskany sand. There was no evidence of any gas in the member and no increase in the salt water which came in at 7,036 ft.

In Lawrence County, John T. Galey et al are hung up with a fishing job in the Murraysville sand at 795 ft. in the test on the Miller and Myers lease, 1 mile north of Energy in Slippery Rock Township.

On Laurel Ridge in Ligonier Township, Westmoreland County, New Penn Development Co., William E. Snee et al are hauling in material for the rig for the Oriskany test on the John E. and Eleanor Beck farm. The road and foundation are completed. In Maryland, William E. Snee et al reached 85 ft. in the Oriskany test on the George Georg farm on the Accident dome in Garrett County, and is hung up with a broken bandwheel shaft.

COMPLETIONS

Armstrong County, Bethel Township: T. W. Phillips Gas & Oil Co. 1 Jonas Myers, 15,000 cu. ft. gas, Tiona sand 3,047-76 ft., gas 3,050 ft., T.D. 3,558 ft.

WEST VIRGINIA

In Grant district, Ritchie County, Benedum & Trees have the rig standing for the deep test, scheduled for the Oriskany sand, on the L. J. Rinehart farm about 2,500 ft. south of U. S. Route 50 on Goose Creek. It will be the first deep test on the Wick anticline.

In Meade district, Tyler County, same operators are drilling at 2,710 ft. in the deep test on the Pearl Broadwater farm. In Freemans Creek district, Lewis County, the Oriskany test of the Hope Natural Gas Co. on the J. D. Lovett farm about 1¼ miles southeast of Freemansburg, is drilling at 1,295 ft. It is being drilled with a rotary.

COMPLETIONS

Taylor County, Booths Creek district: Pittsburgh & West Virginia Gas Co. 6125 J. L. Abel, dry, Big lime 922-1,017 ft., Injun 1,017-1,112 ft., Gordon 1,694-1,707 ft., Bayard 2,030-42 ft., T.D. 3,727 ft.

Tyler County, McElroy district: G. R. Kerns et al 1 Kerns & Eddy, 8 bbl., Big Injun sand, T.D. 2,150 ft.

Upshur County, Meade district: French Creek Oil & Gas Co. 1 R. R. Colerider, 51,630 cu. ft. gas, Benson sand 4,052-71 ft., gas 4,054-64 ft., T.D. 4,076 ft.

Wood County, Lubeck district: South Penn Natural

(Continued on Page 75)

OKLAHOMA FIELD REPORT

Activity Growing in Tecumseh Area, Pottawatomie County

By CARL HOOT

IN the Apache pool of Caddo County, Texas 3 Mulkehay was completed for a flow of 389 bbl. in 12 hours through tubing choke from sand at 3,659 ft.

In Okmulgee County, Gass & McCracken 1 Thompson flowed 5,500,000 cu. ft. of gas from sand at 2,241-51 ft. and in Osage County the Kay County Gas Co. 11-D Osage made 2,500,000 cu. ft. of gas from Burgess sand at 2,568-79 ft. Balance of completions for the week were routine, with a small gasser reported in Creek County.

Pottawatomie Wildcats Active

The Tecumseh pool of Pottawatomie County may be extended south by the Cities Service et al 1 Fort Cobb, SW NE NE 4-8-3. The well was drilled to 5,465 ft. in the second Wilcox, which was dry, then plugged back to perforate and test the upper Simpson and the Viola lime. Hunton was topped at 4,768 ft. Drill-stem test at 4,771-85 ft. recovered 500,000 cu. ft. of gas and 1,670 ft. of 33.8-gravity oil. Last perforations were in the Hunton at 4,768-5,018 ft. and on test the well started flowing at the rate of 60 bbl. an hour with no water. It was shut in for storage.

About 6 miles west and slightly south of the Tecumseh Lake area, C. W. Sharp 1 Wells, a wildcat in the NE SE NE 1-9-2, showed 3,800,000 cu. ft. of gas on drill-stem test at 5,575-93 ft. At last report it was drilling below 5,600 ft. and nearing the first Wilcox.

Homer Hurst 1 Womack, SW SW NE 32-9-3, a wildcat just east of the Tecumseh pool, was moving in tools for a Wilcox sand test.

OKLAHOMA COMPLETIONS

Wildcats

Cleveland County: Phillips 1 Heenan, SE NW SE 6-8-1, dry, T.D. 6,822 ft., Checkerboard 4,686 ft., Hunton 6,021 ft., show oil in Sylvan 6,362 ft., Viola 6,448 ft., second Wilcox 6,796 ft.

Lincoln County, south of Stroud pool: Mid-Continent 1 Walker SE SW SW 13-14-6, dry, T.D. 3,465 ft., Hogshooter 1,640 ft., Checkerboard 2,025 ft., Oswego 2,923 ft., Bartlesville 3,352 ft.

Love County: Walter Neustadt 1-B Locke, SE cor. 8-6s-2, dry, T.D. 2,309 ft., show oil 1,596 and 1,998 ft.

Payne County, 2 mi. north of March field, L. B. Jackson 1 Harris, SE SE NE 17-18-5, dry, T.D. 3,849 ft., Oswego 2,960-3,030 ft., stain, Prue 3,070 ft., Wisener 3,732 ft., Sylvan 3,749 ft., Viola 3,754 ft., Dense 3,780 ft., Wilcox 3,833 ft.

Fields

Apache, Caddo County: Texas 3 Mulkehay, SW NE SE 2-5-12w, flowed 389 bbl. 12 hr., tubing choke, sand 3,659 ft., T.D. 3,900 ft.

E. Cromwell, Okfuskee County: Chapman 1 McFarlin, NE SE SE 1-10-8, pumped 15 bbl., sand 2,987-3,006 ft.

Hewitt, Carter County: W. F. Turner 10 Stearns, NW SW SW 21-4s-2w, dry, T.D. 3,500 ft.

Hobart, Kiowa County: Sherman 1-A Watkins, SW SW NW 20-7-17w, dry, T.D. 1,201 ft., old T.D. 1,100 ft.

Isom Springs, Marshall County: E. J. Gill 3 Adams, NW SE NE 6-8s-6, pumped 25 bbl., sand 486-94 ft.

Jesse, Pontotoc County: L. S. Dennis 1 McCarty, NE NW NW 12-1-7, dry, T.D. 1,502 ft.

Oklahoma City, Oklahoma County: British American 4 Shields, SE NW SW 15-11-3w, pumped 32 bbl., Wilcox 6,415-96 ft., T.D. 6,497 ft.

Osage, Osage County: J. A. Green 8 Osage, NW NW SW 11-21-8, dry, T.D. 2,558 ft.

Sasakwa, Seminole County: R. B. Patterson 1 Cudja, SE NE NE 12-6-7, pumped 32 bbl., sand 1,198-1,212 ft.

N. Terlton, Pawnee County: Selby Oil & Gas 3 Little, SE SE SW 1-20-7, pumped 4 bbl., Bartlesville 2,450-72 ft.

Miscellaneous

Creek County: L. B. Jackson 2 Gregory, NE SE NW 29-17-11, 800,000 cu. ft. gas, Glenn sand 1,958-89 ft.

Sinclair-Prairie 33 Berryhill, E½ SW NW 16-17-12, pumped 30 bbl., Glenn sand 1,405-1,570 ft., T.D. 1,575 ft.

Bryan Pet. 1-A Anthis, SW SW SE 22-18-9, abandoned location.

Bell Oil & Gas 3 Stanley, NE SW SE 33-18-10, dry, T.D. 2,662 ft.

Muskogee County: Link Oil 11 Spotts, NE NE SW 28-15-15, pumped 25 bbl., Dutcher sand 1,561 ft., T.D. 1,938 ft.

Okmulgee County: Garr & McCracken 1 Thompson, SW NW 24-16-11, 5,500,000 cu. ft. gas, sand 2,241-51 ft., T.D. 2,253 ft., R.P. 450 lb.

Osage County: Kay County Gas 11-D Osage, NW cor. 23-24-7, 2,500,000 cu. ft. gas, Burgess sand 2,568-79 ft.

(Continued on Page 85)

Appalachian Fields

(Continued from Page 74)

Gas Co. 1 W. R. Bigelow, 1,000,000 cu. ft. gas, Maxton sand, T.D. 1,350 ft.

ORISKANY GAS FIELDS

Jackson County, Ripley district: Mullins Gas Co. 1 Alfred McVey, 3,800,000 cu. ft. gas, Big lime 1,784-1,927 ft., Injun 1,927-83 ft., Berea 2,402-11 ft., Corniferous lime 4,924-5,021 ft., Oriskany 5,021 ft., shot 5,020-61 ft., T.D. 5,073 ft.

United Fuel Gas Co. 5073 H. F. Bailey, 3,228,000 cu. ft. gas, Big lime 1,804-1,900 ft., Injun 1,900-20 ft., Berea 2,372-2,508 ft., Corniferous lime 4,928-5,041 ft., gas 5,047-51 ft., T.D. 5,068 ft.

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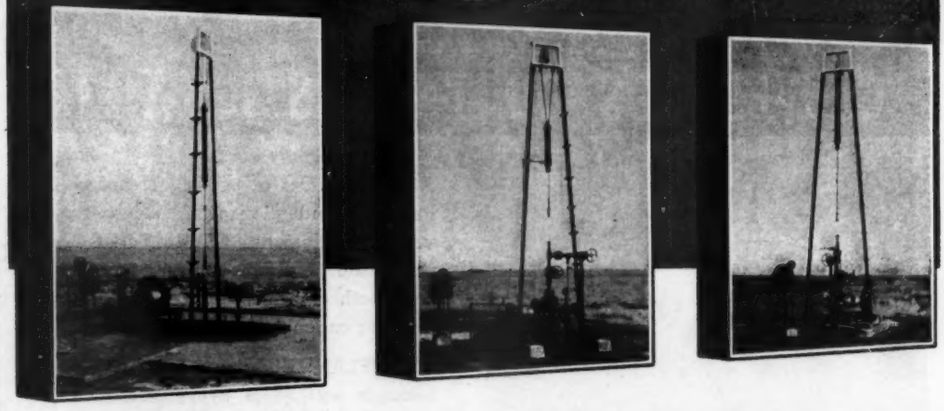

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Mount Vernon Area May Have New McClosky Lime Pool

EVANSVILLE, Ind.—The Carter Oil Co. may have discovered another new pool for Posey County in SW NW 9-7s-14w, where its test, 1 Baker, is reported to have encountered a good show of oil in the McClosky lime. Total depth of the hole is 2,963 ft. and casing has been set at 2,920 ft. No. 1 Baker is 3 miles west of the Mount Vernon pool and about 4 miles due north of a test which was completed last week as another pool opener, Sinclair-Wyoming 1 D. G. Nash, SW SW 32-7s-14w.

At latest reports Kingwood Oil Co.'s 1 Fithan, E½ SE SE 23-1n-10w, Gibson County, was drilling in the Chattanooga lime at 3,000 ft. The test is to be drilled to the Devonian. On a drill-stem test of the Osage lime at 2,402-09 ft. the well flowed in 15 minutes and showed heavy gas pressure. There is no production from the Osage at present in the Tri-State area.

INDIANA COMPLETIONS

Wildcats

Hamilton County: H. C. Baldwin 1 Newby, NW NW SW 13-19n-3e, dry at 1,061 ft., Devonian 331 ft., Trenton 1,041 ft.

Jay County: Smith 1 Rhodes, N½ SE NW 24-22n-14e, pumped 20 bbl., 80-qt. shot on bottom, Trenton 1,070 ft., T.D. 1,111 ft.

Morgan County: C. E. Jefferson 1 G. R. Brown, NW NW NE 16-13n-1w, dry at 1,700 ft.

Posey County: Harry Appell et al 1 Graulich, SW NE SW 13-7s-13w, dry at 1,166 ft., Mansfield 1,124 ft.

Randolph County: John Seip 1 Ward, NW NE NW 10-20n-14e, dry at 1,360 ft., Utica shale 810 ft., Trenton 1,054 ft.

Spencer County: O. D. Vickers & S. Costas 1 E. Sauter, N½ NE NE 32-6s-5w, location abandoned.

Vanderburg County: Sells Pet. 1 J. A. McCarthy, NE SW NW 32-6s-11w, pumped 170 bbl., natural, Waltersburg sand 1,718 ft., T.D. 1,736 ft.

Fields

Hatfield, Spencer County: E. Goldschmidt 1 William Fox, NW NW NW 4-7s-7w, location abandoned.

Hazelton, Gibson County: Gibson Oil trustees 1 G. B. Kerr, NE SW NE 26-1n-10w, pumped 35 bbl., 1,000 gal. acid McClosky 1,787-95 ft., old well deepened from 1,742-1,815 ft.

Kingwood 1 Potts, N½ SE NE SE 23-1n-10w, pumped 55 bbl., perf. 1,848-56 ft., 1,706-12 ft., 500 gal. acid 1,708-12 ft., 1,000 gal. acid, 1,851-56 ft., McClosky 1,654 ft. and 1,708 ft., St. Louis 1,851 ft., show oil 1,848-54 ft., T.D. 2,112 ft.

Mt. Vernon, Posey County: Sinclair-Wyoming 4 Hageman, NW SW SE 1-7s-14w, pumped 337 bbl., perf. 2,022-29 ft., Waltersburg sand 2,022-32 ft., T.D. 2,900 ft.

Wheeling, Gibson County: Big Four O. & G. 1 John Shoultz, NE NW NW 20-4s-9w, dry at 2,340 ft., Paint Creek 1,413 ft., Paint Creek sand 1,415 ft., Bethel 1,480 ft., Renault 1,512 ft., Aux Vases sand 1,528 ft., Paoli 1,574 ft., McClosky 1,642 ft., St. Louis 1,793 ft., Salem 2,101 ft.

OHIO

ZANESVILLE, Ohio.—Completions in the Ohio fields were few and scattered. In the Central Ohio fields two fair gassers were reported in the southwestern section of Wayne County. Work was started on nine new gas tests during the week; seven of these are slated to go to the Clinton horizon.

OHIO COMPLETIONS

Lawrence County, Windsor Township: Petri & Nooman 1 W. A. Dunfee, Sec. 27, 260,000 cu. ft. gas, shot, Ohio shales, T.D. 2,846 ft.

Meigs County, Rutland Township: Guy Swadley 1 fee, Sec. 31, dry, Maxon (water), T.D. 875 ft.

Medina County, Medina Township: Ohio Fuel 2 Alice Blakeslee, Lot 40, dry, Clinton, T.D. 3,237 ft.

Monroe County, Franklin Township: W. P. Gardner et al 3 William Wilson, NW Sec. 1, 2¼ bbl. after shot, Squaw sand, T.D. 1,456 ft.

John Lumbalis et al 1 L. C. Stallings, NE Sec. 9, dry, Squaw sand, T.D. 1,562 ft.

Muskingum County, Licking Township: Wilkins Oil Co. 1 Ben Jenkins, fourth quarter, 400,000 cu. ft. of gas, Clinton 3,082-3,123 ft.

Perry County, Coal Township: Preston Oil Co. 1829 Sunday Creek Coal Co., NE Sec. 26, dry, through Clinton sand, T.D. 3,438 ft.

C. Z. Ruth 22 North West Coal Co., SW Sec. 22, dry, had small showing of oil, Berea grit, T.D. 1,118 ft.

Tuscarawas County, Sandy Township: Natural Gas Co. of West Virginia 2 I. S. Sweaney, Sec. 4, 500,000 cu. ft. gas, shot, Clinton, T.D. 4,669 ft.

Wayne County, Plain Township: Mehowa O. & G. Co. 1 George Rickabaugh, Sec. 28, 1,800,000 cu. ft. gas, Clinton, T.D. 3,187 ft.

Kemrow Co. 2 Frank Fickes, Sec. 28, 1,100,000 cu. ft. gas, shot, Clinton, T.D. 3,159 ft.

EASTERN KENTUCKY OPERATIONS

ASHLAND, Ky.—Two gas wells were completed in eastern Kentucky this week with one of the wells outstanding. Drilling operations are continuing on the same steady level but no new locations were reported this week.

The Kentucky-West Virginia Gas Co. reports an open flow of 1,485,000 cu. ft. of gas daily at well No. 635 on the James Blackburn tract in Pike County. The well reached a total depth of 1,650 ft. and is producing in Big lime. The same company has also completed well No. 5370 on the Solomon Akers land on Mud Creek in Floyd County at a total depth of 1,902 ft. in Big lime and has an open flow of 416,000 cu. ft. of gas daily.

Reports from Magoffin County cite a good showing of oil in "oil sand" in well No. 35 on the Green Rice land. The well, which is being drilled by A. V. Hoenig, is at the 2,000-ft. mark but is being drilled deeper for gas.

The Cumberland Petroleum Co. has recently installed a 60-hp. engine with large compressor unit on the L. C. Bailey lease to replace a smaller unit moved to the Yearns Hale and Mary Burke leases on Mining Fork in Magoffin County. This is the first attempt at repressuring in the Mining Fork section and the test will be closely watched.

EASTERN KENTUCKY COMPLETIONS

Pike County: Kentucky-West Virginia Gas Co. 635 James Blackburn, 1,485,000 cu. ft. gas, Big lime, T.D. 1,650 ft.

Floyd County: Kentucky-West Virginia Gas Co. 5370 Solomon Akers, 416,000 cu. ft. gas, Big lime, T.D. 1,902 ft.

WESTERN KENTUCKY

Daviess County: Reed district: Teller 1 E. W. Hagan, location.

McLean County, Nuckols district: Callas 2 A. C. Atherton, dry hole, T.D. 1,641 ft.

Texas Gulf Coast

(Continued from Page 70)

Ganado, Jackson County: Humble 2 Branch, 456 bbl., ¼-in. choke, sand 6,446-51 ft.

Texas 3 Tunison, 106 bbl., ¼-in. choke, perf. casing 6,441-52 ft., T.D. 6,717 ft.

Lolita, Jackson County: Cox & Hamon 1-A Mitchell, 110 bbl., ½-in. choke, perf. casing 5,291-92 ft., T.D. 5,944 ft.

Maurbro, Jackson County: Humble 2 Gayle, 431 bbl., ¼-in. choke, perf. casing 5,208-12 ft., T.D. 5,234 ft.

North LaWard, Jackson County: Humble 7 Four Way Ranch, 470 bbl., ¼-in. choke, sand 5,223-30 ft.

Magnolia 16 Gordon, 104 bbl., ¼-in. choke, perf. casing 5,209-14 ft., T.D. 5,225 ft.

Rosenberg, Fort Bend County: H. L. Hunt 1 Moore, 30 bbl. distillate ⅛-in. choke, T.D. 8,734 ft.

Spanish Camp, Wharton County: T. J. Hudgins 1 Menefee, 1,800,000 cu. ft. gas 9/64-in. choke, perf. casing 3,100-10 ft., T.D. 3,740 ft.

Van Vleck, Matagorda County: Skelly 10 Moore, 153 bbl., ⅛-in. choke, perf. casing 8,512-14 ft., T.D. 8,523 ft.

Withers, Wharton County: Texas 116-C Pierce, dry at 5,570 ft.

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Only One Oil Well Completed In Quietest Week in Years

By CARL HOOT

COMPLETIONS in Kansas for the week were disappointing, with only one well which was given a potential of 3,000 bbl. This was Continental 5 Gray, SW NE SW 19-18-7w, in the Geneseo pool of Rice County. Five wildcats were abandoned, as were the balance of the nine field tests. Three wells were reworked for a total of 393 bbl. and two locations were abandoned.

Peace Creek May Be Extended

Simpson Oil Co. et al 1-B Souder, SW NE NE 32-23-10w, was running high on the Viola lime at 3,671 ft. A 2½-ft. dolomite core recovered from 3,710-21 ft. showed fair saturation. Five-inch casing was set at 3,674 ft. and cable tools were moved in to test. Total depth was 3,730 ft. The well promises to be an important southwestern extension of the Peace Creek pool and will prove considerable acreage in the south end of the field towards the Zenith pool. Nearest production is the 1 Hollenbeck, NE SE NW 28-23-10w. About 1 mile southwest of 1-B Souder, Simpson 1 Paine, SW NW NE 5-24-10w, was dry in the Viola at 3,834 ft. Total depth was 3,849 ft.

DAILY AVERAGE PRODUCTION

LEADING KANSAS FIELDS

	Mar. 14	Mar. 7
Augusta	1,200	1,150
Bemis-Shutts	11,150	10,200
Bloomer	6,200	5,250
Burnett	10,250	6,500
Burrton	6,400	6,750
Chase	4,800	5,350
Elbing	900	950
El Dorado-Towanda	6,900	6,950
Geneseo	5,950	4,700
Graber	2,100	3,200
Greenwood County	8,550	8,500
Hollow-Nikkel	1,200	1,300
Keesling-Midway	550	1,250
Lerado	100	700
Lorraine	1,350	1,550
Oxford	450	500
Rainbow Bend	800	800
Raymond	1,750	1,750
Ritz-Canton	3,400	3,550
Trapp	21,350	23,150
Balance Russell County	24,250	26,250
Sedgwick County	2,750	2,900
Silica	19,400	19,100
Voshell	1,600	1,650
Wellington	750	800
Wherry	1,400	2,750
Zenith	11,150	8,950
Others	77,750	76,650
Total Kansas	234,400	233,100

KANSAS COMPLETIONS

Wildcats

Kingman County: Stanolind 1 Tredick, W½ NW SW 28-29-7w, dry, T.D. 4,669 ft., Lansing 3,350 ft., Mississippi lime 4,122 ft., Kinderhook 4,405 ft., Misener 4,518 ft., Simpson 4,519 ft., Arbuckle 4,637 ft.

Decatur County: Phillips 1 Vernon, NE NE 32-3-28w, dry, T.D. 4,400 ft., anhydrite 2,425 ft., Topeka 3,603 ft., Lansing 3,751 ft., base Kansas City 3,969 ft., Viola 4,230 ft., Simpson 4,268 ft., Arbuckle 4,276 ft.

Jefferson County: Sherrod & Workman 1 Seitz, SW NE 32-10-19, dry, T.D. 1,643 ft., Mississippi lime 1,625 ft.

Rooks County: Cities Service 1 Conger, NE NE NW 22-10-16w, dry, T.D. 3,689 ft., Topeka 2,930 ft., Lansing 3,208 ft., base Kansas City 3,510 ft., Arbuckle 3,639 ft.

Stafford County: Adair & Morton 1 Roberts, N½ NE NE 14-21-12w, dry, T.D. 3,667 ft., Topeka 2,795 ft., Lansing 3,228 ft., base Kansas City 3,463 ft., Conglomerate 3,482 ft., Simpson shale 3,505 ft., Arbuckle 3,553 ft., 100 ft. of 29-gravity oil in hole at 3,569 ft.

Hinkle Oil et al 1 Harper, SW SW NE 11-24-13w, dry, T.D. 3,919 ft., Lansing 3,520 ft., Viola 3,881 ft., stain 3,894 ft.

Fields

Beaumont, Greenwood County: K. T. Weideman 11-A Lewis, pumped 35 bbl., Mississippi lime 2,417-2,540 ft., old T.D. 1,740 ft.

Bemis, Ellis County: Cities Service 13-B Calahan, SE SW NE 25-11-17w, location abandoned.

Burton, Reno County: Sinclair Prairie 3 Matlock, SW NE SW 3-24-4w, recompleted, pumped 236 bbl., Hunton 3,300 ft., T.D. 3,602 ft., P.B. 3,420 ft.

Frog Hollow, Cowley County: Blair & Rooney 1 Coffman, NW SW NW 15-32-5, dry, T.D. 3,160 ft.

Geneseo, Rice County: Continental 5 Gray, SW NE SW 19-18-7w, 3,000 bbl., Arbuckle 3,175-3,200 ft.

Kraft-Prusa, Barton County: J. J. Lynn 1 Bedford, S½ SW NE 36-16-11w, dry, T.D. 3,407 ft. Stanolind 3 Soeken, NW SW NW 22-17-11w, abandoned location.

Krier, Barton County: Texon 2 Esfeld, E½ SW SW 36-16-11w, dry, T.D. 3,407 ft.

Lost Springs, Marion County: Loriaux & Harrington 1 Hanska, E½ NE NE 5-18-4, dry, T.D. 2,441 ft. Mississippi lime 2,409 ft.

Peace Creek, Reno County: Cities Service 1 Krey, NE NW SW 22-23-10w, recompleted, pumped 122 bbl., Viola 3,794 ft., T.D. 3,805 ft.

Smock-Sluss, Butler County: A. D. Allinson 1 Rutherford, NW NW SE 3-27-5, dry, T.D. 2,752 ft.

Zyba, Sumner County: Waite Phillips 1 Long, SE SE 12-30-1w, dry, T.D. 3,942 ft.

Miscellaneous

Johnson County: W. D. Dunn 1 Morgan, SW NW 6-13-22. dry, T.D. 1,735 ft. in Arbuckle.

F. J. Kasper 1 Kissick, SE NE 30-13-22, dry, T.D. 178 ft.

NEBRASKA-MISSOURI

ST. JOSEPH, Mo.—Magnolia Petroleum Co. has farmed out its 120-acre Albert Zentner lease in the Barada oil pool of Richardson County, Nebraska, to Ike W. Taylor of Centralia, Ill., who will drill three wells on it. His first will be an east offset to Skelly 1 Zimmerman. After perforation of casing at 1 Schawang in the Barada pool, Skelly had its twelfth producer. The well was to be acidized. Meanwhile, Skelly has started drilling 1 Wiltse, ¾ mile east of production in the Dawson pool. After a long wait, Towle & Isaacks perforated casing at 1 Sibbernsen on the east edge of the pool. There was some fill up with oil.

MISSOURI COMPLETION

Platte, Platte County: Bradford & Son 2 Street, SW SW SW 5-50n-33w, dry, T.D. 287 ft.

Louisiana Gulf Coast

(Continued from Page 72)

but details as to where the other sands were logged were not available.

LOUISIANA GULF COAST COMPLETIONS

Wildcats

Iberia Parish: P. G. Benedum 1 L. L. & E., dry at 9,020 ft.

St. Landry Parish: Stanolind 1 R. L. Mills, dry at 10,350 ft.

Fields

Bayou Sale, St. Mary Parish: Humble 3 Marin, 281 bbl., 9/64-in. choke, perf. casing 10,160-74 ft., T.D. 10,515 ft.

Caillou Island, Terrebonne Parish: Texas 7 State, 259 bbl., 12/64-in. choke, perf. casing 6,685-6,730 ft., T.D. 6,740 ft.

Cameron Meadows, Cameron Parish: Burton-Sutton 28 Cameron Parish School Board, top sand 7,185 ft., dry, T.D. 7,218 ft.

Delta Farms, La Fourche Parish: California 3 Delta Farms, 92 bbl., ⅛-in. choke, perf. casing 8,929-34 ft., T.D. 11,322 ft.

Welsh, Jefferson Davis Parish: V. Mandell Peters, 1 Smith, dry at 1,161 ft.

West Bay, Plaquemines Parish: Gulf 3 State, 252 bbl., 5/32-in. choke, perf. casing 7,294-90 ft.

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Among the Drilling

Contractors' Association Seeks Data on Drilling Equipment

AN INVENTORY of all drilling equipment in the country is being made by the American Association of Oilwell Drilling Contractors, Dallas, Tex. Data assembled will be reported to the Office of Petroleum Coordinator at Washington which has given its approval to compilation of the inventory. "This information," asserts a bulletin from the contractors' association, "is essential to an intelligent allocation of strategic materials to the drilling industry.

"In the case of a renewal of drilling activity, both the status of operating equipment and its geographical location, will have a bearing upon the contractors' position. For these reasons all drilling contractors and producing companies are urged to fill out the questionnaire form as completely as possible."

The association has asked that two copies of the individual rig inventory forms be prepared, the original sent to the Dallas office, 1402 Gulf States Building, and the other retained in the reporting companies' files.

Inventories are to be held strictly confidential, the bulletin declares.

•

LONG & WOLFE, Graham, Tex., have the contract to drill F. A. Stephenson et al 2 J. L. Maberry in the McCaulley pool, Fisher County, Texas. Location is in Section 56, Block 1, H.T.&B. Survey.

MORAN Drilling Co., Wichita Falls, Tex., have contracted to drill Fain-McGaha 1 Bryan Dunigan in the Wimberly pool, Jones County, Texas.

HUNTER & ROBERTS, Abilene, Tex., are drilling Humble Oil & Refining 3 D. O. Huddleston-B, an inside well in the Noodle pool, Jones County, Texas. Location is 1,787 ft. from the south line and 660 ft. from the east line of Section 38, T.&P.R.R. Survey.

BUTLER & HORNE, Dallas, Tex., have taken a contract to drill a wildcat in Jones County, Texas, for Humble Oil & Refining Co. It will be Humble 1 Mrs. Anna E. Cook et al, Section 46, Block 18, T.&P.R. Survey, 660 ft. from NW cor. SW¼.

T. L. WHEELER, Wichita Falls, Tex., will drill a southeast offset to the Snoddy 1 Tipton, discovery in Taylor County, Texas. The well will be T. J. Waggoner, Jr., et al 1 J. H. Doscher et al, Section 20, Block 18, T.&P.R. Survey.

BREWSTER-BARTLE Drilling Co., Houston, Tex., opened a new field, north of Houston in Harris County, Texas, with completion of George Strake 1 Phoenix Dairy which is flowing at the rate of 60 bbl. of oil and 40 bbl. of salt water per day while testing through a ⅛-in. choke. Production is from the Yegua formation at 7,186-93 ft.

E. G. BRADHAM, El Dorado, Ark., has received the contract to drill Hygrade Oil Co. 1 Ford, NW NW 32-14-23, Hempstead County, Arkansas. The test is a wildcat about 10 miles northeast of the Midway field in Lafayette County.

FALCON-SEABOARD Drilling Co., Houston, Tex., is preparing to start a Wilcox test in the Nebo field, La. Salle Parish, Louisiana, for Sinclair Prairie Oil Co. In the Midway field, Lafayette County, Arkansas, one well is in process of completion and another rig is engaged by Barnsdall Oil Co. West of the Tepetate field, Acadia Parish, Louisiana, drilling continues below 9,000 ft. in Vincent & Welsh 1 Homeseekers Development Co.

ALLEN & MORRIS, San Antonio, Tex., received contract from Seaboard Oil Co. 1 Lehman, a wildcat 5 miles east of the Petronilla field, Nueces County, Texas.

GLENN H. McCARTHY, Houston, Tex., has completed his 1 Munson on the Bailey's Prairie area, Brazoria County, Texas, as a gas-distillate producer. The well was drilled to 11,530 ft., and is producing from sand at approximately 11,300 ft. The well is several hundred feet from the contractor's 1 W. B. Munson, which showed for a producer in the same sand several months ago, but was later temporarily abandoned owing to mechanical trouble. The contractor is starting a new operation in the Magnolia field, Montgomery County, and has two rigs operating in the Stowell field, Jefferson County.

J. O. FOX & SON, Dallas, Tex., have contracted to drill a wildcat in northeastern Coleman County, Texas, for W. M. Holland and Gladys Huffman of Fort Worth, Tex., to 3,250 ft. The well will seek Ellenburger lime production. It is to be spudded this week in the SW Section 17, H.T.

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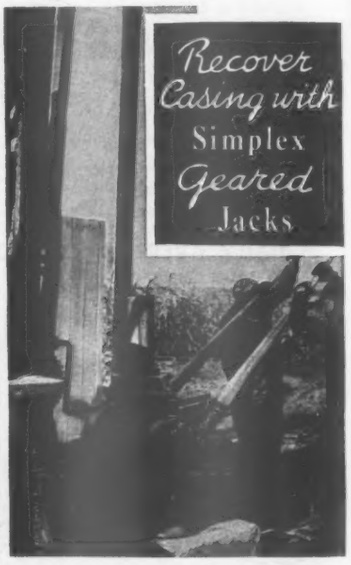

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Contractors

&B. Survey. Fox & Son have also taken the contract for a well ½ mile east of production in the Sewell area of Young County, Texas, in the 50-acre tract out of the northeast quarter of the R. M. Burton Survey.

CRON & GRACEY, Houston, Tex., opened a new sand in the East White Lake field, Vermilion Parish, Louisiana, for Union Oil Co. of California. The producer 3-A Vermilion Parish School Board was completed in sand at 5,900 ft., and preparations were being made to move to a new location.

CROSS & JOHNSON, Midland, Tex., were rigging up at Mascho Oil Co. 1 Sun Oil Co.-University, a wildcat 2 miles northwest of the Emma field in Andrews County, Texas. Location of the test is 660 ft. from the south and east lines of Section 11, Block A-37, P.S.L. Survey, ¾ miles west of the Fullerton Oil Co. 1 Wilson, a discovery well.

JACK FRAZIER, Houston, Tex., moved a rotary to the Huntington area, Angelina County, Texas, for 1 Angelina County Lumber Co., a projected 5,000-ft. wildcat, approximately 10 miles southeast of Lufkin.

E. J. GRACEY, Houston, Tex., is moving a rotary to the Texana field, Jackson County, Texas, for Moore & Ahern 1 Clements, in the S. F. Austin Survey.

B. G. BYARS, Tyler, Tex., is the contractor for a wildcat drilling in West Nacogdoches County, Texas, by Fain-McGaha Oil Corp. and W. H. Peckham, both of Wichita Falls, Tex. Materials were being moved into location on a block of 9,000 acres taken by S. A. Cochran, Tyler, for the test. Petroleum Produdcers Co. and Pan American Production Co. have acreage in the area.

OAKWOOD Drilling Co., Oklahoma City, Okla., contractor on Bruce Sullivan et al 1 Sikes, a wildcat in Section 24, Block 1, R. M. Thompson Survey, Cottle County, Texas, 3 miles southeast of Swearingen, was ready to move in rotary tools after setting surface casing at 400 ft. The test is to go to 4,200 ft.

ROWAN Drilling Co., Fort Worth, Tex., is moving in rig to drill a 6,000-ft. wildcat in south Victoria County, Texas, just north of the Calhoun County line in an area where several dry holes have been drilled in the last 2 years. The test is Ray Ranger 1 Bankers Mortgage Co., 4 miles due south of the Keeran field in the center of combined Lots 6 and 7, Alejandro Esparaza Survey.

GEORGE BARHAM, Midland, Tex., has spudded Gulf Oil Corp. 39 Waddell et al, Section 18, Block 3, H.& T.C. Survey, a southeast offset to Gulf 1-B Tubb et al, in the Sand Hills deep area, Crane County, Texas. The well is an Ordovician test.

HENSHAW BROTHERS, San Antonio, Tex., opened a new field, 2 miles south of the Springfield townsite, Jim Wells County, Texas, with the completion of Bruce Baxter 1 Koopman, completed in sand at 4,115-22 ft. for an initial production of 85 bbl. daily through 3/32-in. choke.

RHODES Drilling Co., Abilene, Tex., has taken a 3,600-ft. contract for Robert W. McKissick et al 1 John W. Harris, an outpost near the Novice pool, Coleman County, Texas. Location is 660 ft. from the south and west lines of Section 51, G.H.&H. R.R. Survey, Block 2. Rhodes is also drilling two other wells in the Novice pool proper for McKissick.

IDEAL Drilling Co., Oklahoma City, Okla., has the contract from Herman Hurst to start work immediately on 1 Womack, SW SW NE 32-9-3, southwest of Tecumseh, near the one-well Tecumseh pool in Pottawatomie County, Oklahoma.

Rex Thompson, tool pusher, Lofland Brothers; Ray Parker, South Louisiana representative for W-K-M Co., and John Simpson, driller for Lofland Brothers photographed on location in the Pine Prairie, Louisiana, field

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COLMONOY
Hard Surfacing Alloys and Overlay Metals

North Central Texas Fields

(Continued from Page 67)

oil and 70 bbl. water through 2-in. tubing, pay 5,377-5,401 ft., Caddo 5,030 ft., Chappell lime 5,278 ft., acid, T.D. 5,710 ft.

Thornberry, Clay County: Bridwell Oil 19 H. C. Edrington est., 660 ft. from south line and 660 ft. from southeast line of Edrington tract, Sec. 24, B. B. B. & C. Sur., A-898, 7 mi. west of Petrolia, dry, show oil 1,068-79 ft., T.D. 1,571 ft.

Dudley, Fisher & Kahn 1 W. A. Henderson-B, 960 ft. from north line and 900 ft. from east line of S. Hernandez Sur., A-185, 7 mi. west of Petrolia, dry, T.D. 1,351 ft.

Wilbarger County: Consolidated 1 A. D. Potts-D, Sec. 4, Blk. 7, H.&T.C. Sur., flowed 156 bbl. in 3 hr. through ¾-in. tubing choke, est. 1,000 bbl., C.P. 580 lb., T.P. 250 lb., gas-oil ratio 543:1, gravity 43, pay from Mississippian lime and Ellenburger at intervals between 4,094-4,539 ft., K.M.A. 3,878 ft., Caddo 4,094 ft., T.D. 4,539 ft., *discovery*.

Wise County: Hunt Oil 1 T. B. Stack, A. Johnson Sur. A-1330, dry, base Palo Pinto 1,093 ft., Caddo 5,210 ft., Barnett 6,315 ft., Viola 6,887 ft., Ellenburger 6,940 ft., T.D. 7,003 ft.

Young County: Kerlyn & Phillips 1 W. P. Stephens, Sec. 1946, T.E.&L. Sur., dry, Caddo 4,054 ft., T.D. 4,372 ft.

Miscellaneous

Archer County: C. S. Schram et al 1 J. Sternadel, Sec. or Lot 18, J. R. McDowell Sur. A-282, dry, T.D. 1,420 ft.

Cooke County: Russell & Russell 2 Mrs. M. B. Rosson, 3 mi. southeast of Muenster, dry, T.D. 1,764 ft.

Young County: Cable Oil 14 J. Williams, W. Adams Sur., A-364, completed as water input well, show oil 568-70 ft., T.D. 570 ft.

Young County: J. F. Milton 1 Dora Logan, Sec. 234, T.E.&L. Sur., dry, T.D. 982 ft.

McLester & Keith 2 Mrs. S. P. Akers, William McClure Sur. A-183, semiproven, flowed 225 bbl. in 9 hr. through ½-in. tubing choke, natural, est. 450 bbl., Caddo 3,340-58 ft., gravity 41, T.D. 3,358 ft.

Producers Development 7 R. D. Owen, Sec. 38, R. D. Owen Sur. A-2245, semiproven, flowed 5 bbl. through 2-in. tubing, natural, pay 3,521-32 ft., T.D. 3,859 ft.

Merkel Sector Receives New Wildcat Test

West Central Texas' newest producing area, the Merkel sector in Taylor County, added another wildcat operation last week. Tom B. Meddlers began moving in tools for a 3,000-ft. well ½ mile south of the Blair community in the J. W. Moore farm. It is out of a 2,800-acre block assembled during the past few weeks by the operator.

The location is 5 miles south of the pool opened 2 weeks ago at W. L. and C. W. Snoddy 1 L. S. Tipton from lime at 2,745-71 ft. The Snoddy well flowed 183 bbl. of oil on an official 8-hour gage and was rated at 549 bbl. a day.

Meanwhile, the new pool had three new drilling operations. They were: W. H. Hammon 1 Dosher-Neblett, Section 20, Block 18, a south offset to the discovery; T. J. Waggoner, Jr., 1 J. H. Doscher, southeast offset to the discovery, Section 18; and Jennings & Griffin 1 Tipton, Section 18, east offset to the pool opener.

Deep Well Has Fishing Job

The deepest well to be drilled in North Texas during the past year, R. W. Talbot 1 R. H. Jewell, Grayson County, was shut down for a difficult fishing job after going to a total depth of 8,024 ft. in lime. Operators lost 1,200 ft. of drill pipe. The well, in Block 15, William Allen Survey, found a small show of oil in lime at 7,865-75 ft.

WEST CENTRAL TEXAS COMPLETIONS

Wildcats

Brown County: J. D. Andrews 1 T. N. Thomas, Sec. 62, H.T.&B. Sur., dry, T.D. 775 ft.

Coleman County: McMillan & Rominger 1 J. L. Wilkerson, Sec. 3, G.H.&H. Sur., old well worked over, dry, Caddo 2,787 ft., T.D. 2,823 ft.

Concho County: W. J. Rutledge, Jr., et al 1 Will Loveless, location abandoned.

Shackelford County: Jones & Stasney et al 1 T. W. Gresham, Sec. 7, B.A.L. Sur., dry, Caddo 3,550 ft., T.D. 3,915 ft.

Stephens County: Benton & Roach 1 Nellie Caraway, Sec. 79, R. & P. Ry. Sur., Blk. 4, location abandoned.

Fields

McCaulley, Fisher County: M. W. Walker 1 M. H. Hill, S. P. Walker Sur., pumped 10 bbl., pay 840-50 ft., T.D. 850 ft.

Noodle, Jones County: Humble 3 D. O. Huddleston-B, Sec. 38, T.&P.R. Sur., Blk. 18, dry, T.D. 3,055 ft.

Wimberly, Jones County: Butler & Horne 1 O. J. Fikes, Lot 105, Godwin subdivision of De Witt C.S.L. No. 126, pumped 150 bbl. in 12 hr., pay 2,361-68 ft., T.D. 2,375 ft.

Miscellaneous

Callahan County: R. C. Lanning et al 3 E. R. Battle, M. Cherry Sur. 4, pumped 26 bbl., pay 1,730-38 ft., T.D. 1,738 ft.

California Fields

(Continued from Page 68)

mented preparatory to making a production test. Attempts to make conclusive formation tests failed because of shoulder failures and thus the importance of this sand will not be known until the zone is tested out. The depth of the hole is shallow enough to warrant the setting of 8⅝-in. casing as the bottom of the well is at 1,152 ft. Many operators have drilled in the Jasmine district in the past as it is an area where production should normally be found but so far only dry holes have resulted. Top of the Pyramid Hills oil sand was fixed by electric log at 1,100 ft. and the bit was still in the possible pay when drilling operations were concluded for a test.

Deep Test Started in Kern River Field

Seaboard Oil Corp., which operating as Milham Exploration Co. discovered the Kettleman North Dome field in the San Joaquin Valley, has started another well that will be watched with considerable interest because it would open up considerable acreage for development. Seaboard's new wildcat in Kern County is 1 Fuhrman in 28-28s-28e and while it is scheduled to be a deep test it may not have to go as deep as expected. This wildcat is located in the old Kern River field, one of the oldest fields in the state, and consequently if Seaboard succeeds in getting flush production in a lower sand it will mean much to producers in that district. The Kern River field is a water-drive field, there being little or no gas produced, and it is necessary for operators to produce large quantities of water in order to secure small quantities of crude oil. Production of the field consists of a heavy gravity oil ranging from 11 to 13° in gravity and the wells are all very small producers. Much of the field has been shut in for several years due to low prices for heavy crude oil and consequently it will be several months after rejuvenation work starts before the water head will be produced sufficiently to permit production of crude oil. This is one of the fields producing heavy crude oil in which the production committee for District 5 desires to increase production in order to meet anticipated needs for heavy fuel oil and refinery residuum. Most of the wells that have been suspended in the Kern River field have been reduced to a skeleton form and the old equipment moved into other fields for use. As a result it will be necessary for operators to reequip wells with rods, tubing and in many cases pumps in addition to the usual other material necessary. Many operators have considered deep zone possibilities of Kern River as negligible but it remains to be seen if this opinion will be justified. A number of deep wells have been drilled around the Kern River field in past years without success but in every case these wildcats were drilled off the structure and in search of accumulations located adjacent to Kern River. Several wells were drilled up in the Kern River bluffs as well as east of the old field. Drilling operations to the west resulted in the finding of commercial production in what is now known as the west front.

Shafter Area Test Makes Small Showing

Development in the Shafter district of Kern County finds Continental Oil Co. recovered from a redrilling job and making new hole in 1 Neuman at 10,900 ft. and General Petroleum Corp. proceeding with a series of tests on 51-15 Southern Pacific. The former well is located in 36-27s-24e and the latter well is located in 15-28s-24e. Gen-

eral Petroleum has bottomed its Southern Pacific wildcat at 14,252 ft. and the log shows the hole was cleaned out to 13,945 ft. and 40 shots made at 13,765-85 ft. With a packer at 12,934 ft. and a water cushion of 3,964 ft. and with a 24/64-in. bean and open 35 hours and 20 minutes the well blew continuously at a small rate for the period of the test. The recovery consisted of 7,890 ft. of dirty water and a trace of oil and gas. The hole was then cleaned out to 13,945 ft. and with a packer at 12,974 ft. and 3,965 ft. water cushion open 10 hours the well showed a light blow throughout and yielded 5,950 ft. of muddy water, a scum of oil and some gas. A total of 20 shots was then made at 13,920-30 ft., 20 shots at 13,900-10 ft., 12 shots at 13,860-70 ft. and 20 shots at 13,840-50 ft. With packer at 13,819 ft., 3,950 ft. water cushion, 8/64-in. bean and open 20 hours and 47 minutes the well showed a light blow and the recovery consisted of 9,329 ft. of muddy water and a small amount of oil. This wildcat is still being worked on and while it has shown some favorable indications its future status has not yet been determined.

SAN JOAQUIN VALLEY COMPLETIONS

Coalinga Northeast, Fresno County: Standard 55-19-B fee, 19-19s-16e, flowed 1,504 bbl., 27-gravity, 0.3 per cent cut, 2,922,000 cu. ft. gas, 34/64-in. bean, pressures 1,600-85 lb., T.D. 8,242 ft., perf. 8,222-44 ft., Kreyenhagen 6,664 ft., green sand 7,790 ft., oil sand 8,003-8,242 ft., completed in Gatchell zone of Eocene age.

Superior Oil Co. 1 Husong, 18-19s-16e, flowed 697 bbl., 26.1-gravity, 0.1 per cent cut, 357,000 cu. ft. gas, 18/64-in. bean, pressures 1,100/2,750 lb., T.D. 8,234 ft., P.B. 8,144 ft., recompleted after plugging bottom of hole account water.

McDonald Island wildcat district, San Joaquin County: Standard 2-1 West Coast Life, 4-1n-5e, dry at 5,306 ft., green sand 4,374 ft., form. test 5,276-5,306 ft., open 10 minutes, recovered 4,800 ft. salt water and no gas.

Illinois Fields

(Continued from Page 72)

SW SE 3-1n-13w, dry, Glen Dean 2,095 ft., Golconda 2,280 ft., Barlow 2,374 ft., Cypress sand 2,445 ft., Paint Creek 2,508 ft., Benoist 2,559 ft., Aux Vases 2,632 ft., Ste. Genevieve 2,674 ft., Fredonia 2,688 ft., old well deepened from 2,768-71 ft.

Martinsville, Clark County: Wayworth Oil 1 McFarland, SE SW SW 19-10n-13w, pumped 5 bbl., natural, Mississippian lime 500 ft., Carper sand 1,325 ft., T.D. 1,568 ft.

Maud, Wabash County: Tide Water 1-A E. P. Steckler, SW SW NW 26-1s-13w, dry, old well P.B. from 2,665-2,572 ft.

New Harmony, White County: Tide Water 14 Dennis, SW NW NE 33-4s-14w, pumped 93 bbl., Waltersburg, Cypress and Benoist, old well P.B. from 2,956-2,748 ft.

Tide Water 8 Dennis, NW SW NE 33-4s-14w, pumped 102 bbl. from Cypress and Benoist, old well deepened from 2,733-36 ft.

Tide Water 3 Dennis, SE SW NE 33-4s-14w, pumped 135 bbl. from Waltersburg and Cypress, 40-qt shot 2,583-2,603 ft., Waltersburg 2,140-60 ft., old well deepened from 2,594-2,603 ft.

Noble, Richland County: Pure 1 Williams Lagle, W½ SW SE 28-4n-9e, dry at 3,018 ft., Glen Dean 2,425 ft., Barlow 2,575 ft., show oil 2,662-67 ft., Aux Vases 2,895 ft., Ste. Genevieve 2,935 ft., Rosiclare 2,948 ft., Fredonia 2,970 ft., McClosky 2,994 ft.

Parkersburg, Richland County: Central P. L. et al 1 McVaigh, W½ NW NE 28-2n-14w, dry at 3,154 ft., Glen Dean 2,518 ft., Barlow 2,686 ft., Benoist 2,841 ft., Renault 2,915 ft., Ste. Genevieve 3,000 ft., Fredonia 3,036 ft.

Parkersburg, Edwards County: Central P. L. et al 1 F. Bierhaus, N½ SE SE 31-2n-14w, flowed 1320 bbl., 2,000 gal. acid, McClosky 3,112-20 ft., T.D. 3,120 ft.

Roland, White County: Kingwood and Sinclair 1 Clow, SW NE NW 12-7s-8e, pumped 64 bbl. oil and 8 bbl. water, 10-qt. shot 2,183-85 ft., Waltersburg sand 2,181 ft., T.D. 2,199 ft.

Rural Hill, Hamilton County: Kewanee 2 G. W. Dial, SW SW NE 22-6s-5e, pumped 26 bbl. oil and 76 bbl. water, natural, Aux Vases sand 3,210-32 ft., T.D. 3,279 ft., P.B. 3,238 ft.

Salem, Marion County: Texas 9 E. Tate, NE NW SW 31-2n-2e, pumped 24 bbl., 1,500 gal. acid in McClosky, old well worked over, T.D. 2,050 ft.

Permian Basin, Panhandle Fields

(Continued from Page 66)

bbl. through casing, pay 4,100 ft., T.D. 4,150 ft., shot.

Virginia Shaw 2-B Pearsall, SE NW 4-18-32, abandoned location.

Lynn: Continental Oil 5 Lynn A-28, NE NE 28-23-36, 54,000,000 cu. ft. sour gas, 2,950 ft., T.D. 3,276 ft.

Skelly: Western Gas Co. 1 Duthie, NW SE 18-23-37, 6,200,000 cu. ft. sweet gas, 3,360 ft., T.D. 3,684 ft., acid.

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WIN THE WAR

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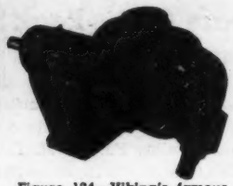

Figure 124—Viking's famous truck mounting pump has many superior, exclusive features for hard, day-to-day service.

Figure 12—Viking's standard motor drive with relief valve on head: capacities 5 to 90 GMP. Efficient and dependable.

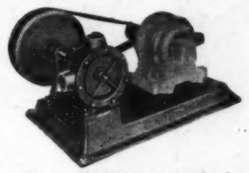

Figure 53—Viking's standard V-Belt driven unit, capacities 5 to 1050 GPM.

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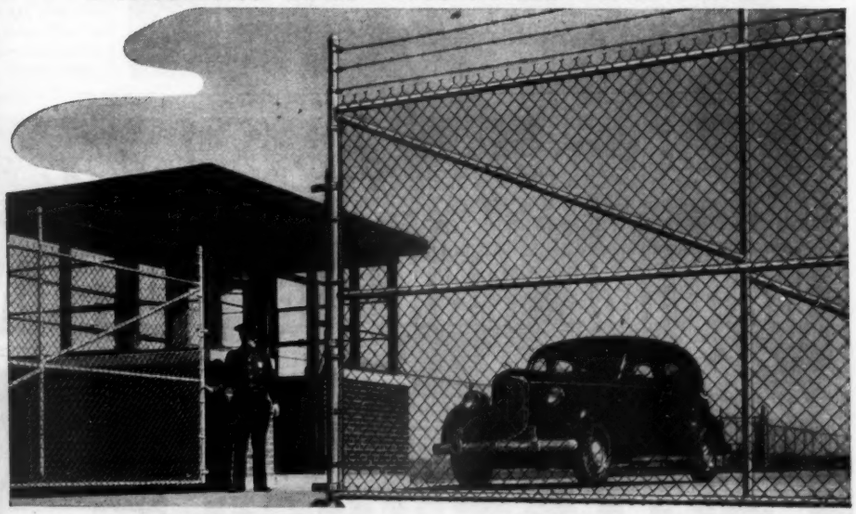

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NO. LOUISIANA, ARKANSAS

Lincoln Parish Wildcat Nears Travis Peak Section

SHREVEPORT, La.—Carter 1 T. J. Greene, SW NE 2-17n-3w, wildcat well near Ruston, La., in Lincoln Parish, is nearing the Travis Peak section, now drilling shale and lime at 6,420 ft.

In Avoyelles Parish, H. L. Hunt 1 Thompson & Katz, SW SW 4-2n-5e, wildcat test near Marksville, is coring at 7,080 ft.

Navarro Oil Co. began drilling March 3 on their wildcat, Louisiana Central 1, SE SW 6-11n-3e. Caldwell Parish, set 10¾-in. casing at 596 ft., now waiting on cement at 600 ft.

Atlantic Refining Co. 1 Catahoula Lake, SE NW 27-7n-4e, La Salle Parish wildcat, began drilling operations March 3 and is now drilling at 1,020 ft. Another wildcat test in this same parish, Phillips Petroleum Co. C-1 Tensas Delta, SE SW 21-6n-4e, is moving in material to begin operations this coming week.

Union Producing Co. 1 McDonald, 13-21n-5w, Claiborne Parish, drilled hard sand at 12,562 ft., and same operator's B-1 Meadows, 13-21n-5w, is drilling ahead at 5,355 ft.

Two more producers were added to the new Midway field in Lafayette County, making a total of nine flowing wells in the field. Barnsdall 2 Bond, SW NW 11-15-24, set casing at 6,531 ft. and on test flowed 3 bbl. an hour. Top of pay is 6,457 ft. Barnsdall 1 Beck, NE NW 14-15-24, topped porosity at 6,397 ft. and after perforating flowed 30 bbl. an hour through tubing choke. Five-inch casing was set at 4 Bond, which had found porosity at 6,345 ft. and operators are now waiting on cement. Work on this well has been delayed because of high water from the Bodcaw Creek which runs through the field. Definitely limiting the field on the southwest side, Barnsdall 1 Wayne G. Creek, SE SE 10-15-24, was abandoned at a total depth of 6,524 ft.

Barnsdall is building roads and starting four new tests in the field. These are the 1 Roberts, NW SE 11-15-24, which has set surface pipe; the 2 Roberts, SW SE 11-15-24; 1 Millard Creek, SW NE 10-15-24, and the 3 Roberts, NW NE 14-15-24.

Burns Pool, East Schuler

When Root Pet. Co. 1 Cottrell, NE NE 23-18s-17w, was completed making 96 bbl. oil at 5,833 ft., it extended the Burns pool to the southwest, and drilling in this area is expected to become more active.

Arkansas Oil and Gas Commission Meeting

The Arkansas Oil and Gas Commission ordered immediate reopening of South Arkansas fields which were shut down February 27 for bottomhole pressure gages pending preparation of data to support the commission's protest of federal spacing regulations. The commission at the same time voted to ask Petroleum Coordinator Ickes for approval of permits for additional drilling in the Dorcheat, Macedonia and McKamie fields.

Chairman O. C. Bailey said the commission would request specifically that operators' applications for 21 new wells be granted, and also stated he would leave for Washington later this week to submit technical data compiled by the commission in support of its protest of federal spacing rules limiting drilling to 640-acre tracts.

The commission set March 24 as date for a state-wide oil and gas hearing at El Dorado, when allowables for all pools during April, May and June will be set. Thirty-two wells in the Magnolia field will be shut in for a 24-hour period this week for the purpose of taking bottom-hole pressures to provide this data. Pressures will be taken at 12 wells Thursday, 12 Friday and 8 Saturday.

ALABAMA

After having a good show of gas at 1,562 ft. in the wildcat well Reid Clark 1 R. F. McWilliams, NW SE 9-11n-10e, Wilcox County, operators resumed drilling and are now reported below 1,680 ft. In Fayette County, E. E. Thomason 1 Alabama Education Foundation, 3-16s-12w, is now running 8¼-in. casing. A very slight show of oil was reported around 2,235 ft. The E. O. Heath 1 Hester, SW SE 4-6s-12w, Franklin County, is reported drilling in limestone at 1,975 ft.

NORTH LOUISIANA COMPLETIONS

Wildcats

La Salle Parish: H. L. Hunt B-1 Tensas Delta, SE NE 35-5n-4e, dry at 7,142 ft.

Fields

Kelly, Caldwell Parish: Mudge Oil Co. 2 International Paper Co., NE SW 6-11n-4e, dry at 3,521 ft.

Nebo, La Salle Parish: H. L. Hunt F-84 Goodpine, NE SW 21-7n-3e, 194 bbl. oil and 4 bbl. water, 4,139 ft.

ARKANSAS COMPLETIONS

Fields

Stephens, Columbia County: R. H. Crow A-2 E. C. Smart, SE SW 12-15s-20w, pumping 225 bbl. fluid, 3 per cent b.s. and w., 3,395 ft.

Midway, Lafayette County: Barnsdall Oil Co. 3 Edgar S. Bond, SW SW 11-15s-24w, 715 bbl. oil, 6,442 ft.

Barnsdall Oil Co. 1 W. G. Creek, SE SE 10-15s-24w, dry at 6,524 ft.

Barnsdall Oil Co. 1 B. H. Dobson et al, SE NE 10-15s-24w, 454 bbl. oil, 6,420 ft.

Barnsdall Oil Co. 2 B. H. Dobson et al, SW NW 11-15s-24w, 324 bbl. oil, 6,462 ft.

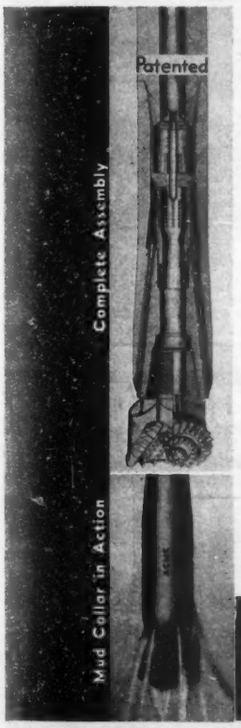
Frank & George Frankel 1 J. H. Burns, NW NE 10-15s-24w, 356 bbl., 6,523 ft.

Gerhig Co. 1 J. Rogers, NW SW 1-15s-24w, abandoned at 625 ft.

P. R. Rutherford 1 Stamps Land Co., SE SW 3-15s-24w, dry at 6,579 ft.

Smackover, Union County: Curtis Kinard 1 Holloway, SW SW 5-16s-16w, pumping 40 bbl., 2,740 ft.

East Schuler, Union County: Root Pet. Co. 1 Cottrell, NE NE 23-18s-17w, 96 bbl. oil, 5,833 ft.



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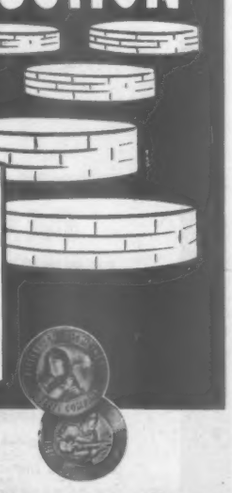

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MICHIGAN OPERATIONS

Lake County Test Watched As Possible Boom Starter

By OTTO C. PRESSPRICH

SAGINAW, Mich.—With some prospects appearing for easing of federal-control regulations, projected drilling operations in Michigan oil fields spurted somewhat last week as the state Department of Conservation issued 14 permits, the largest number for any week to date this year and bringing the permit list for 1942 to 90.

Meanwhile there were possibilities of a new boom in northwestern Michigan while operators awaited the results of a test in Sauble Township, Lake County, on a promising wildcat strike 30 miles from production.

On the south end of the original Lincoln (Reed City) field Pure Oil Co. and Charles W. Teater completed the fourth successive producer in Richmond Township, Osceola County, the well being rated for a potential of better than 4,000 bbl. initial a day.

However, there were only five other completions for the week, one being the second producer for Franklin Township, Clare County. The well, located in part of the Roscommon Headquarters field, rated better than 1,900 bbl. potential. The three dry holes all were wildcat tests, one being drilled to nearly 4,000 ft. in Clare's Lincoln Township. The others were in Ottawa and Livingston counties. Blizzards which raged early last week over most of Michigan were partly responsible for the few completions recorded.

The 14 permits for new drilling activities were divided among 10 counties, Osceola getting 3, Roscommon and Clare 2 each. The others were for Gratiot, Ottawa, Kent, Isabella, Bay, Missaukee, and Gladwin counties.

While the state Revenue Department was making the first returns to counties of severance taxes under the act amended at the last session of the legislature, the Conservation Department auctioned lease rights on 12,300 acres of state-owned lands. Briskest bidding was for offerings in Backus and Lvons townships of Roscommon County, payments going as high as $5 an acre. The 12,300 acres brought returns totaling $9,250. Gladwin, Clare, and Mecosta County lands were leased but several thousand acres offered in Antrim County went begging.

The January severance tax totaled $51,141, of which $10,228 will go into county road funds. The tax, based on production of 1,617,000 bbl. of oil and 2,104,000,000 cu. ft. of gas, is 2 per cent on a valuation of $2,557,000. Osceola County's oil production was nearly a third of the total and Lincoln Township alone will receive $3,360 of the tax money.

MICHIGAN COMPLETIONS

Allegan County, Trowbridge Township: John F. Burton 2 Waterman-Lindsey, NE SE NE 31-1n-13w, pumped 87 bbl., after acid, T.D. 1,355 ft.

Clare County, Franklin Township: Pure Oil Co. 1 Felthouse, E½ NW fractional ¼, 3-20n-3w, 1,944 bbl., T.D. 3,382 ft.

Lincoln Township: Freeman Oil Co. 1 Callahan, C S½ SW SE 25-18n-5w, wildcat, dry, T.D. 3,989 ft.

Livingston County, Hartland Township: Fisher-McCall Oil & Gas Co., Inc., 1 Hibner, C SW NE 14-3n-6e, wildcat, dry, T.D. 1,578 ft.

Osceola County, Richmond Township: Pure Oil Co. and Charles W. Teater 1 Carney-Dahlberg, C N½ NE NW 5-17n-10w, 4,032 bbl., T.D. 3,560 ft.

Ottawa County, Olive Township: W. Spencer Cook 1 Vinkemulder-Weener, C S½ SW NW 22-6n-15w, wildcat, dry, T.D. 1,693 ft.

CANADIAN FIELDS

Expect to Resume Tar Sand Operations in May

By VICTOR LAURISTON

CHATHAM, Ontario—Crude and natural gasoline production from all Alberta fields for the week ending March 2 averaged 29,857 bbl. daily compared with 30,307 bbl. daily for the previous week and 26,840 bbl. daily for the corresponding week last year. The daily average included 28,512 bbl. of crude and 1,036 bbl. of natural gasoline from Turner Valley and 309 bbl. of crude from outside fields. There were 203 producing wells, 37 drilling, 1 new well on production, 7 testing, 1 standing, 1 new well spudded and 1 drilling permit issued.

TURNER VALLEY LIME TESTS

North Turner Valley: Atlas-British Dominion 2, LSD 4, 17-21-3w5, T.D. 8,710 ft., Madison at 8,285 ft., temporary allowable 909 bbl. daily.

Major Oil 4, LSD 8, 8-21-3w5, T.D. 7,836 ft., Madison at 7,415 ft., temporary allowable 647 bbl. daily, retesting for larger allowable.

Foothills Oil & Gas 11, LSD 11, 4-21-3w5, T.D. 7,753 ft., Madison at 7,340 ft., acidizing and testing.

Miracle Royalties 2, LSD 6, 4-21-2w5, T.D. 7,755 ft., Madison at 7,340 ft., flush 1,473 bbl. daily, temporary allowable 862 bbl. daily.

Foothills Oil & Gas 10, LSD 2, 4-21-3w5, T.D. 8,069 bbl., Madison at 6,619 ft., P.B. to 7,434 ft., acidizing and testing.

Royalite Oil 62, LSD 3, 22-20-3w5, T.D. 8,990 ft., testing upper lime.

West-Central Section: Anglo-Canadian 11, LSD 5, 25-19-3w5, T.D. 8,119 ft., Madison at 7,885 ft., acidizing and testing upper lime.

Drillers & Producers 3, LSD 3, 7-19-2w5, T.D. 8,150 ft., Madison at 7,701 ft., temporary allowable 250 bbl. daily.

Alberta Pacific Royalties 1, LSD 14, 6-19-2w5, T.D. 8,325 ft., Madison at 7,872 ft., acidizing and testing.

Ram River Test

In the Clearwater-Ram River area, in the foothills northwest of Calgary, Ram River Oils 2, 1-37-11w5, is preparing to resume from 3,670 ft. as soon as weather moderates. Test started in the Madison and most of the drilling has been in Devonian limestone, with small oil shows between 3,520 and 3,600 ft.

Pouce Coupe Project

In the Pouce Coupe area, in the northern foothills west of Peace River, rotary equipment is being moved from Edmonton for Bonanza Royalties 1, tentatively located in LSD 4, 26-8-13w6. The well, sponsored by Clifton C. Cross & Associates of Calgary will spud in April, and production is expected around 5,000 ft.

Abasand Oils Operations

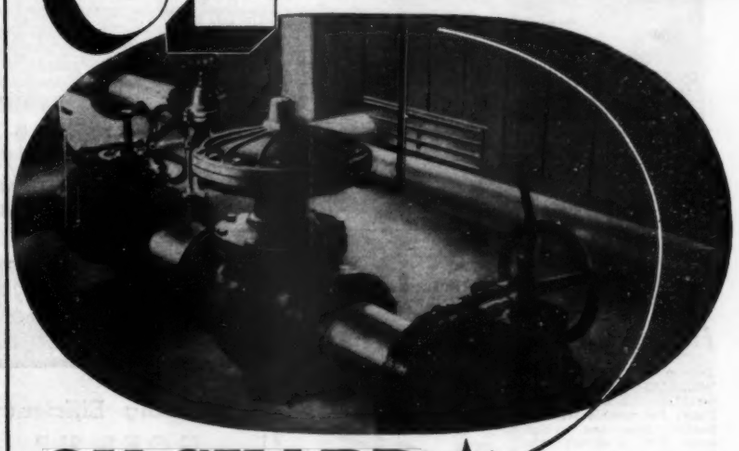
In the tar sand area of Northern Alberta, the new plant and buildings of Abasand Oils, Ltd., replacing those destroyed by fire last fall, will be completed about May 1. The new constructions will increase the capacity of the original plant approximately 50 per cent.

Saskatchewan Operations

Operations in the Province of Saskatchewan recently have been restricted by cold weather. In southern Saskatchewan, Southern 2, LSD 3, 10-1-13w3 is below 1,180 ft. In the southeastern section, Bobjo 4, 28-7-1w2 is finishing below 1,340 ft. The latter is the last of a series of structure tests, on the basis of which location will be made for a commercial deep test to spud early in the spring.

(Continued on Page 91)

C-F Pilot Loaded REGULATORS



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Pacific Coast Operators Are Critical of OPC Orders

(Continued from Page 24)

Joaquin Valley gas available for Southern California; (7) use the Paloma and Coles Levee fields as recycling operations by storing gas during the summer and withdrawing it in the winter.

The open forum following the symposium developed a number of undecided issues. Mr. French of Continental Oil Co. wanted to know if success could be expected from the present program. Mr. Aubert thought it would take some additional time to work out the necessary changes in the present program. Mr. Rubel believed there should be more cooperation between operators and government but that the multiplicity of committees will retard successful completion of the broad program. Many of those present endorsed this opinion and it was believed that something should be done immediately. Mr. Magruder thought the natural gasoline industry would be able to work out its problem but would like to see tangible action and most of the red tape removed. Joseph Jensen suggested that the 40-acre limitation be discarded and substituted with production committee determination of what drilling is necessary. He also thought there was a definite need in California for some one with authority to release material at least as far as heavy crude-oil production is concerned. E. E. Pyles, chairman of the production committee for District 5, thought there would be immediate relief as far as heavy crude-oil fields are concerned but did not believe any change in the 1 well to 40-acre limitation would be lifted in light crude-oil areas. Mr. Rubel's suggestion to streamline all the cumbersome committees which have resulted in too much talk and not enough action met with a hearty response.

Asks Adequate Reserves

Mr. Aubert in his symposium paper brought out the need for maintaining adequate crude-oil reserves and indicated that if the industry fails in this regard some operators would be out of business definitely. Without attempting to enumerate the factors in the order of their importance he thought primary consideration should be given to (1) supplying sufficient marine and industrial fuel-oil; (2) the necessary aviation-gasoline components; (3) natural gas for industrial and domestic consumption; (4) motor fuel and other products for civilian use and (5) supplying all the foregoing elements at the proper time and at the proper place. Mr. Aubert brought out that natural-gas production decreased 240,000,000 cu. ft. per day and that isobutane production dropped 49,000 gal. daily when the production committee set district quotas to provide an additional 22,000 bbl. per day of heavy crude. This was of course rectified because isobutane is an important hydrocarbon used in the manufacture of aviation gasoline. Mr. Aubert indicated that gasoline production will be increased 40,000 bbl. per day in California.

Tom M. Girdler, chairman of the board, chief executive officer and director of Republic Steel Corp., Cleveland, Ohio, was the principal speaker at the evening meeting in the Biltmore Bowl.

E. C. Babson, chairman of the California topical committee on production practice, presided at the morning session during which three papers were presented.

Ernest K. Parks, chairman of the program committee and a Los Angeles consulting engineer, was elected Pacific Coast chairman succeeding Bruce H. Robinson. Carlton Beal was elected vice chairman for Los Angeles Basin; P. S. Kartzke was elected vice chairman for the coastal district and D. E. Koch was elected vice chairman for the San Joaquin Valley. W. G. Corey was reelected treasurer and David S. Kilgour was named secretary.

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Priorities—P-98

(Continued from Page 31)

supplier to evidence the proper rating granted pursuant to the provisions of this order.

3. In addition to the requirements of paragraph (e)(1), the operator (but not a supplier), in order to apply the preference rating assigned by paragraph (b)(5)(ii) must obtain the countersignature of the director in charge of a district office of the Office of Petroleum Coordinator upon the purchase order or contract which such operator has endorsed and signed pursuant to paragraph (e)(1).

4. In addition to the requirements of paragraph (e)(i), the operator (but not a supplier), in order to apply the preference ratings assigned by paragraphs (b)(5)(i),(b)(6)(i) and (b)(6)(ii), must obtain the countersignature of the director in charge of a district office of the Office of Petroleum Coordinator upon the purchase order or contract which such operator has endorsed and signed pursuant to paragraph (e)(i), unless any individual item to be obtained under the ratings assigned by these paragraphs and to which a preference rating is to be applied has a cost to the operator of $500 or less.

(f) Restrictions on use of material obtained under a rating.

When an operator has applied a rating authorized by this order, he must use the material delivered pursuant to the rating or an equivalent amount of material for the purpose stated in his endorsement pursuant to paragraph (e). In no event shall any operator use material delivered to him pursuant to a preference rating assigned by this order in violation of the provisions of any conservation order issued by the director of priorities.

(g) Exception of operators from provisions of preference rating orders Nos. P-43, P-46 and P-100.

No operator engaged in operating a petroleum enterprise and covered by this order shall be entitled to apply the preference rating assigned by preference rating orders Nos. P-43, P-46, and

P-100, and no such operator shall be subject to the provisions of such orders.

(h) Preference rating assistance other than that granted by the terms of this order.

Any operator engaged in operating a petroleum enterprise may request preference rating assistance for deliveries of material to him by filing with the Office of Petroleum Coordinator applications for preference rating assistance on any appropriate preference rating or project rating application form issued pursuant to the authority of the director of industry operations.

(i) Records.

In addition to the records required to be kept under priorities regulation No. 1 the operator and each supplier placing or receiving any purchase order or contract rated hereunder shall each retain for a period of at least 2 years, for inspection by representatives of the War Production Board, endorsed copies of all such purchase orders or contracts, whether accepted or rejected, segregated from all other purchase orders or contracts, or filed in such manner that they can be readily segregated for such inspection.

(j) Communications to Office of Petroleum Coordinator.

All reports which may be required to be filed hereunder and all communications concerning this order shall, unless otherwise directed, be addressed to:

"Office of Petroleum Coordinator
"Washington, D. C., Ref.: P-98."

(k) Violations.

Any person who wilfully violates any provision of this order or who by any act or omission falsifies records to be kept or information to be furnished pursuant to this order may be prohibited from receiving further deliveries of any material subject to allocation, and such further action may be taken as is deemed appropriate, including a recommendation for prosecution under Section 35 (a) of the Criminal Code (18 U. S. C. 80).

(l) Revocation or amendment.

This order may be revoked or amended at any time as to any operator or any supplier. In the event of revocation, deliveries already rated pursuant to the provisions of this order shall be completed in accordance with said rating, unless the rating has been specifically revoked with respect thereto. No additional applications of the rating to any other deliveries shall thereafter be made by any operator or supplier affected by such revocation.

(m) Applicability of priorities regulation No. 1.

This order and all transactions affected thereby are subject to the provisions of priorities regulation No. 1, as amended from time to time, except to the extent that any provision of this order may be inconsistent therewith, in which case the provisions of this order shall govern.

(n) Effective date.

This order shall take effect on the date of issuance and shall continue in effect until May 15, unless extended.

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Houston, Texas

Southwest Texas

(Continued from Page 71)

155 lb. working pressure and recovered 1,980 ft. of light gravity oil. Drill-stem testing earlier in the week at 7,120-29 ft., recovered 200 ft. of oil and tested 70 lb. working pressure while 15 gal. of distillate was recovered the previous week on a 5-minute test at 6,595-7,007 ft.

One mile north of the town of Berclair, Goliad County, Magnolia Petroleum Co. in attempting to run 7-in. casing in 1 Wilkerson stuck the pipe at 3,664 ft., where it was cemented. This well has been showing considerable gas pressure for the past few weeks, possibly from the Eponides Yegua topped at 4,979-81 ft. Other geological markers were reported as follows: Vicksburg 3,314-44 ft., Jackson 3,637-67 ft., Hockleyensis 3,928-58 ft., Dibollensis 4,592-4,622 ft., Cockfield 4,730-60 ft., and the Yegua at 4,904-06 ft. The well is expected to be drilled to the Wilcox.

In the Laredo district, O. W. Killam and Mid-States Oil Co. 2 Puig was being watched with interest as a drill-stem test was being attempted following the logging of sand with an oil odor at intervals from 2,224-32 ft. The well is located in the Albercas grant, about 2½ miles south of the McLean field which produces from sand at 3,200 ft., although some showings have been logged at approximately 2,200 ft.

SOUTHWEST TEXAS COMPLETIONS

LOWER GULF COAST DISTRICT

Fields

Agua Dulce, Nueces County: Ginther, Warren & Ginther 1 Eliff, 114 bbl., ⅛-in. choke, perf. casing 6,898-6,903 ft., T.D. 6,997 ft.

Texon Royalty 6 Austin, 198 bbl., ⅛-in. choke, perf. casing 6,855-60 ft., T.D. 7,053 ft.

Seeligson, Jim Wells County: Transwestern 2-A Seeligson, 71 bbl., 5/64-in. choke, perf. casing 5,935-39 ft., T.D. 5,990 ft.

Stratton, Nueces County: Texon Royalty 6 Eliff, dry at 6,004 ft.

Odem, San Patricio County: Seaboard 4 Smith, 123 bbl., ⅛-in. choke, perf. casing 5,317-19 ft., T.D.

LAREDO DISTRICT

Wildcats

Duval County: H. Coquat 1 Hyatt, dry at 5,202 ft.

Fields

Boyle, Starr County: Rutherford & Owens 5 Carruth, 66 bbl., 7/64-in. choke, perf. casing 3,519-25 ft., T.D. 3,532 ft.

Colorado, Jim Hogg County: Humble 57-B King, 166 bbl., ⅛-in. choke, T.D. 3,092 ft.

McLean, Webb County: O. W. Killam 2 Marrs McLean, 165 bbl., pumping, sand 3,223-32 ft., T.D. 3,279 ft.
Killam & McLean 3 McLean, 190 bbl., pumping, perf. casing 3,226-36 ft., T.D. 3,257 ft.

Rincon, Starr County: Continental 2-B Slick, 145 bbl., ⅛-in. choke, perf. casing 4,019-31 ft., T.D. 4,080 ft.

South Seven Sisters, Duval County: C. M. C. Oil Co. 2 State, 21 bbl., pumping, sand 2,625-37 ft.
C. M. C. Oil Co. 4 State, 40 bbl. fluid, 42 per cent salt water, pumping, sand 2,642-49 ft., T.D.

Washburn, La Salle County: Quintana 7 South Texas Syndicate, 438 bbl., ¼-in. choke, sand 5,654-74 ft.
Quintana 8 South Texas Syndicate, dry at 5,650 ft.

Yturria, Starr County: Sun 2-B Garcia Land & Livestock Co., 79 bbl., 12 hr., 9/64-in. choke, sand 4,204-09 ft.

SAN ANTONIO DISTRICT

Fields

Bee Creek, Caldwell County: Ralph Ogden 8-B Miears, 480 bbl., open tubing, T.D. 2,123 ft.

Rockdale, Milam County: H. H. Coffield 1 fee, 20 bbl., pumping, top sand 1,340 ft., T.D. 1,367 ft.

Oklahoma Fields

(Continued from Page 75)

Pawnee County: Barnsdall 3-W Osage, SE SE NW 30-21-9, dry, T.D. 373 ft., water flood well.

Pontotoc County: Victory Oil 1 McCurry, SE SE NE 16-4-6, dry, T.D. 928 ft.

Tulsa County: Continental Oil & Ref. 1 Semkey, W½ NE NW 9-21-13, dry, T.D. 1,250 ft., old T.D. 1,111 ft., Bartlesville 1,111-67 ft.

OKLAHOMA PANHANDLE

Texas County: Panhandle Eastern 1 Wacker, 25-3n-15ecm, 4,800,000 cu. ft. gas, natural, T.D. 2,773 ft.

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ROCKY MOUNTAIN AREA

Wyoming Hopes to Supply Black Oil to Northwest

By T. R. INGRAM

DENVER, Colo.—Wyoming low-gravity black oil fields, after a long period of slow markets, are beginning to come into their own and will receive considerable attention from the producers this year. This activity is credited primarily to the increasing demand for fuel oil for defense purposes and Wyoming's strategic position for providing the necessary supplies. The principal market in the past, outside of the Rocky Mountain area, was in Minnesota and adjacent territory, but operators are anticipating an increasing demand from the Pacific Northwest.

Heretofore large quantities of fuel oils have moved from the California fields by tank to the region around Puget Sound, and while these shipments are continuing, new factors are entering the picture. The demand for defense industries, naval requirements, and for shipments to bases in the Pacific are drawing heavily on California producers and as a result the consumption in that area is on the increase. Against this increase is the shortage of tankers and the hazard of operating in waters subject to submarine attacks. It is believed that the movement of black oil from Wyoming and Montana in that direction will show a steady gain as the war progresses. This is indicated in some of the results which now are apparent.

Wyoming's total production in 1941 was 25,853,536 bbl. of crude of all grades, an increase of less than 1 per cent over 1940. Of this total, 5,607,557 bbl. came from seven black oil fields, exclusive of fields which produce both light and heavy oil in considerable quantities. The seven fields showed an increase of 39 per cent in 1941 over 1940, or 1,576,695 bbl. These include Black Mountain, Byron, Dallas-Derby, Frannie, Maverick Springs and Oregon Basin. The same percentage applies also to the smaller fields producing black oil. This situation resulted in an accelerated drilling campaign in the black oil fields in 1941, particularly in the latter part of the year, and 28 wells were completed with an increase in the districts mentioned above with an aggregate initial production of 9,535 bbl. a day.

Spacing Regulations Retard Lance Creek Drilling

The regulations regarding the spacing of wells in producing fields have begun to curtail drilling in this area. This is particularly noticeable in such fields as Lance Creek. It was anticipated that about 40 wells would be drilled this year on the east side as a result of the settlement of title litigation with the Government last year. This number will be drastically reduced, although there is a demand for all the crude the field can produce. Just how many will be drilled is not yet known. Some operators interpret the rules to mean that only one well to 40 acres is allowable, regardless of the number of producing horizons in a field. In Lance Creek there are two main horizons more than 1,000 feet apart and one well to each horizon on 40-acre tracts originally was con-

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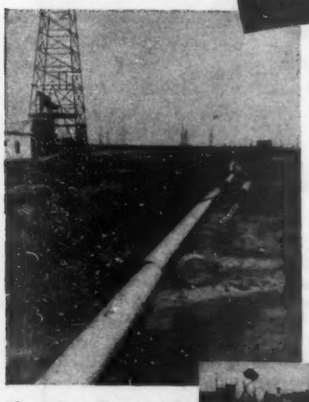

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Book Dept., The Oil and Gas Journal

sidered the proper spacing, but that practice now seems to be out of the picture.

Pilot Butte Wildcat to Test Tensleep

The Superior Oil Co. wildcat in the Pilot Butte field, in which British-American Oil Producing Co. is joint operator, will stop and test oil shows in the Tensleep before drilling deeper. It is bottomed at 6,448 ft., and is running pipe to set on top of the Tensleep at 6,177 ft.

Plan to Unitize Grass Creek

Plans for the unitization of the Grass Creek field in Wyoming along lines similar to those followed a few years ago in bringing Salt Creek into a single operating unit, are reported making progress. The field was discovered in 1914 and has produced more than 29,000,000 bbl., most of it light oil from the Frontier formation. That horizon has been drilled up for some time, but black oil in deeper pays is a more recent development. Little Buffalo Basin gas field has been unified and it is expected that Elk Basin will be the next on the program. Stanolind Oil & Gas Co. and the Ohio Oil Co. are the principal operators.

All drilling wells in Kevin-Sunburst were idle the past week on account of cold weather.

The long winter, delays arising out of priorities, spacing rules, etc., and uncertainties as to the spring drilling programs are causing contractors in this territory considerable trouble in holding their drilling personnel intact. A considerable number of men chafing under the delays, which appear to be unavoidable, have gone to the Pacific Coast to take employment in the shipyards and war industries, and when the season gets under way there may be a shortage of experienced drillers.

MacKinnie Oil & Drilling 1 OPC, a completion in Lance Creek, which swabbed 48 bbl. in 5 hours, is an outside well on the northeast side and extends the productive area in Sundance one location to the north.

Continental Oil Co. has made a location for 1 Shoshone-Arapahoe Indian lease in SW SW NW 6-6n-2w, Circle Ridge field, Wyoming. It is a southeast offset to same company's 3 Shoshone Indian which was completed last November at 660 ft. for 191 bbl. from the Tensleep after casing off 216 bbl. a day from the Embar. Development of this field may be entitled to a special rating inasmuch as very little steel is required for drilling to that shallow depth and it is possible to use old casing which can be cemented for its entire depth. Development is for black oil for which there is a growing demand.

Sinclair-Wyoming 1 Mary Carter, wildcat on Sherrard dome, showed 25 ft. of oil and 2,025 ft. of water on a drill stem test at 5,047-69 ft. in

(Continued on Page 91)

SUMMARY OF OPERATIONS, ALL FIELDS, FEBRUARY

	Comp.	Oil	Prod.	Gas	Dry	Completions Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Footage	Drlg.
Appalachian	457	363	790	81	13	10	393	36	18	0	819,027	520
Ohio	56	11	529	26	19	11	12	33	0	0	129,054	94
Indiana	14	6	527	1	7	8	3	3	0	0	13,027	71
Eastern Kentucky	13	0	0	12	1	9	3	1	0	0	17,872	43
Western Kentucky	8	1	40	0	7	6	1	1	0	0	6,977	19
Michigan	57	32	83,759	2	23	0	22	34	1	0	155,142	114
Illinois	108	72	16,094	1	35	4	18	86	0	0	300,155	155
Kansas	135	82	82,814	3	50	3	24	108	0	0	332,507	132
Nebraska	3	1	122	0	2	0	2	1	0	0	7,306	2
Missouri, Iowa	2	0	0	0	2	1	0	1	0	0	5,215	0
Oklahoma	116	53	5,896	17	46	4	33	57	22	0	395,911	174
North Texas	60	29	5,062	1	30	14	26	11	9	0	141,227	29
West Central Texas	37	15	1,027	1	21	7	15	15	0	0	84,701	21
Northern West Texas	79	74	72,193	0	5	0	2	35	42	0	382,192	91
Southern West Texas	69	60	41,975	0	9	1	7	50	11	0	240,102	107
Texas Panhandle	39	31	4,744	8	0	0	0	39	0	0	118,965	25
East Texas	35	21	3,095	4	10	2	1	6	26	0	159,450	18
Upper Gulf Coast	80	54	12,863	2	24	0	1	8	67	4	495,620	91
Lower Gulf Coast	47	34	4,081	2	11	0	0	1	45	1	284,431	68
South Central Texas	8	0	0	0	8	1	2	4	1	0	15,167	26
South Texas	35	20	2,974	0	15	0	6	22	7	0	121,318	48
Southeast New Mexico	17	12	1,554	0	5	1	1	13	2	0	59,928	83
Arkansas	10	2	146	3	5	0	2	3	5	0	48,536	20
North Louisiana	47	25	5,706	0	22	0	14	28	5	0	194,877	27
Louisiana Gulf	48	35	8,837	0	13	0	1	0	24	23	420,364	84
Mississippi	9	5	1,426	0	3	0	0	7	2	0	41,527	24
Alabama	0	0	0	0	0	0	0	0	0	0	0	1
Georgia	0	0	0	0	0	0	0	0	0	0	0	2
Montana	12	8	1,207	4	0	4	3	5	0	0	23,327	71
Wyoming	9	6	998	0	3	1	1	3	4	0	36,174	57
Colorado	3	2	495	0	1	0	1	1	1	0	12,979	32
Northwest New Mexico	4	2	90	1	1	1	3	0	0	0	6,765	12
California	79	46	25,842	2	31	4	11	30	30	4	390,064	102
Florida	0	0	0	0	0	0	0	0	0	0	0	1
Total February	1,695	1,102	384,886	171	422	92	608	641	322	32	5,459,907	2,377
Total January	2,314	1,520	522,347	225	569	175	795	919	396	29	7,431,969	2,807
Difference	699	422	137,461	54	147	83	187	278	74	3	1,972,062	430

Completions during February dropped sharply from January, being 30 per cent down. All areas were involved in the decline, except in the eastern fields, where an increase was reported. Drilling activity is also down with a decline from 2,807 drilling wells to 2,377. Included in these 2,377 drilling wells, there are a large number which are shut down so that the number of actually drilling wells is probably considerably below 2,000.

During the first 3 weeks of March, completions show a further decline and it is probable that when the March figures are finally assembled, drilling will have declined another 30 per cent from the February level.

The drop in drilling activity is fairly uniformly distributed over the three classes of wells, oil, gas and dry. As the last-named are a measure of the amount of wildcatting, it will be seen that the attempts made to encourage wildcatting have not resulted in much success.

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Sucker Rod Wipers .....

Double seal

All sizes of rods from ⅝" to 1⅛"

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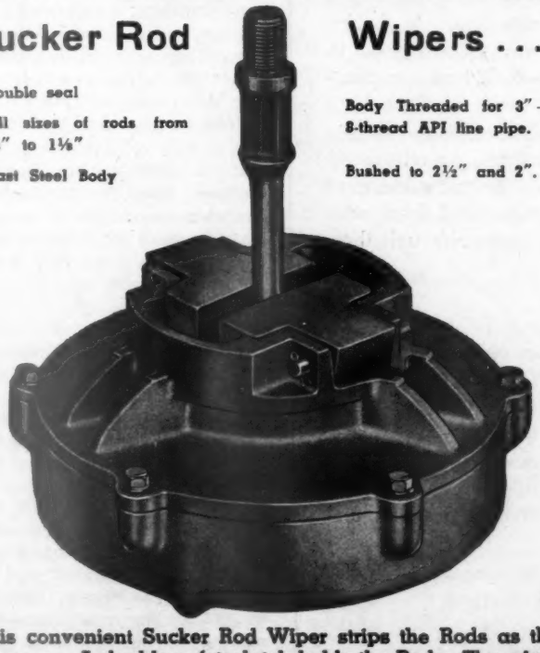

This convenient Sucker Rod Wiper strips the Rods as they come up. A double safety latch holds the Rods. The wiping is done by two freely floating, self-aligning, reinforced discs of tough wear-resisting rubber. See Composite Catalog.

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PATTERSON-BALLAGH PRODUCTS

PROTECTORS · STABILIZERS · MUD GUNS · PIPE & WIRE LINE WIPERS · WIRE LINE GUIDES

LEGAL

United States Department of the Interior, District Land Office, Las Cruces, New Mexico. Notice is hereby given that the lands herein described in the Artesia Oil and Gas Field, New Mexico are offered to the qualified bidder of the highest amount offered per acre as a bonus for the privilege of leasing the lands under section 17 of the leasing act as amended by the act of August 21, 1935 (49 Stat. 675; 30 U.S.C. 185) at the royalty rate scale in the lease form shown in Circular 1386 at a sale to be held in the United States Land Office at Las Cruces, New Mexico at 10 o'clock A.M. April 22, 1942 in the following parcels: Parcel #1, T. 18 S., R. 27 E., Sec. 1, SE¼; Parcel #2, T. 18 S., R. 27 E, Sec. 12, all. The successful bidder must deposit on date of sale with the officer in charge of the sale a certified check on a solvent bank or cash for one-fifth of the amount bid by him and file the showing of qualifications to receive a lease required by section 7 of Circular 1386. The remainder of the bonus and the annual rental at the rate of $1.00 per acre must be paid and a $5000 corporate surety bond must be furnished prior to the issuance of the lease. Bids may be submitted for both parcels of land provided the aggregate acreage of such parcels and all other holdings of the bidder in the Artesia field is not in excess of 2560 acres, separate leases to issue for each parcel. Bidders are warned against violation of section 59, United States Criminal Code, approved April 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Register.

New MAC

PLUNGER BARREL

for 2-inch tubing

Gypsum cannot form in this barrel.

Outlasts three ordinary barrels, as Steel Plunger works in and out of Cast Iron Barrel as much as 2 feet on the up and down stroke and more if desired, thus flushing itself free of sand or gypsum.

Reversible Valve Body and Plunger make for lowest upkeep.

Furnished with 2-Cup Standing Valve and with, or without, Garbutt Rod.

Save, with the New "MAC"! Ask for complete details and price list.

McGREGOR

WORKING BARREL COMPANY

Bradford, Pa., U.S.A.

Personal Paragraphs

HARRY T. HUNTER, petroleum engineer with Stanolind Oil & Gas Co. in its Tulsa offices, has been ordered to active duty with the field artillery as a second lieutenant at Camp Roberts, Calif. He will report for duty the latter part of this month.

W. B. HOOVER, geologist for Humble Oil & Refining Co. at Amarillo, Tex., will be transferred to its Wichita Falls, Tex., offices about April 1 when Humble will temporarily close its geological offices there. "TEX" CRAWFORD, land man and scout for Humble, will remain in Amarillo.

W. F. HERBERT, division petroleum engineer for Texas Co. at Fort Worth, Tex., was elected president of the Fort Worth Petroleum Engineers Club at its annual election March 16. Mr. Herbert succeeds CLYDE L. ROBINSON, production engineer for Gulf Oil Corp. Newly elected vice presidents are: LEWIS FINCH, petroleum engineer for Stanolind Oil & Gas Co.; JOHN P. KLEP, division manager for Sperry-Sun Well Surveying Co., Fort Worth, and J. F. ADKISSION, production engineer for Sunray Oil Co. JOE BYRON, engineer for Gulf Oil Corp., was elected secretary-treasurer.

R. G. FOLLIS, general manager of the manufacturing department of Standard Oil Co. of California with offices in San Francisco, has been elected a director of the company succeeding A. S. RUSSELL, vice president and director, who has retired after serving 31 years with the company.

ROBERT E. WILSON, president, Pan American Petroleum and Transport Co., has been appointed a member of a four-man board of General Aniline and Film Corp. of Delaware, formerly German-owned corporation which has been under the control of the Treasury for several months. General Aniline is now producing 90 per cent of all dyestuffs for Army uniforms.

T. E. WEIRICH, Phillips Petroleum Co., Bartlesville, Okla., presided last Saturday at a symposium on "The Comanchean of Kansas, Oklahoma, and Texas," at the University of Oklahoma, Norman, Okla. The Comanchean formation in its various states was reviewed by: DR. GAYLE SCOTT, Texas Christian University, Texas; DR. J. W. STOVALL, University of Oklahoma, Oklahoma; NORMAN PLUMMER, Kansas Geological Survey, Kansas; WARREN B. WEEKS, Phillips Petroleum Co., Shreveport, southwestern Arkansas and northwestern Louisiana.

CARL P. TOMLINSON, president, McColl-Frontenac Oil Co., Montreal, Canada, was visiting in South Texas last week while on a tour through the states.

A. W. HAMILL, independent operator of Tulsa, has been notified that his son, Ensign Marshall Hamill, of the U. S. Navy cruiser Houston, is missing. Young Hamill was graduated from Annapolis with honors in June 1940.

J. A. MOLLER, in the production department of the Texas Co., is recuperating from a serious illness and has been looking forward to his return to active service with the California division with which he has served many years.

HARRY LEYENDECKER, who resigned as chief scout for Tide Water Associated Oil Co., to accept the job of senior petroleum development analyst with the Division of Production, OPC, District 3, has been succeeded by R. C. POWLESS.

ED W. OWEN, president, American Association of Petroleum Geologists, addressed members of the Shreveport (La.), Geological Society Monday. He talked on affairs of the association. GEORGE SCHNEIDER, Texas Co., also was a speaker, discussing the discovery rate of fields in Southern Louisiana.

J. W. BOYD becomes assistant manager and G. P. JENNINGS becomes chief engineer of the gasoline pipe-line department of Phillips Petroleum Co., according to recent announcement by A. W. HUBBELL, manager. At the same time L. A. WHITEHAIR has been assigned to handling matters of the gasoline pipe line in the personnel department.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

Venezuela automobile owners are paying 86½ cents a gallon for gasoline—and they haven't any war, either. Joy riding in that country isn't very joyous.

On the Delaware River at Brammell's Point, N. J., the Vacuum Oil Co.'s new refinery is shortly to be placed in operation. It will employ about 600 men. It has fine docking facilities.

A German submarine attacked and sank three vessels flying the flag of the United States, including an oil tanker, the Illinois, owned by the Texas Co. The crew escaped death. The vessels were given no quarter, and there was an utter disregard for the lives of the crew, although they managed to escape.

20 YEARS AGO

Wyoming's great handicap, a lack of pipe-line facilities, may soon be a thing of the past. The Western Pipe Line Co. promises an 8-in. line from Salt Creek to Casper, and other companies have signified similar intentions.

Oklahoma continues to produce in excess of 350,000 bbl. a day. The Lyons pool and the Burbank pool are both producing in excess of 45,000 bbl. with their limits still undefined.

Eastern refineries are still declining to take all the high-priced eastern oil, and stocks are accumulating.

10 YEARS AGO

Severe cold and a 5-in. snowfall in the Laredo, Tex., territory slowed up operations more effectually than any proration plan.

Thomas R. Waterbury, Continental manager of the Texas Oil Co., Ltd., for a number of years, died at Territet, Switzerland. He was 41 years old.

CHESTER J. BRADLEY, scout for Texas Co. in the East Texas area, has been made district land man at Tyler, Tex.

HARRY H. ARNOLD, JR., chief division geologist, Texas Co., Tulsa, left Sunday for Camp Leonard Wood, near St. Louis, Mo., to become a lieutenant in the Engineer Corps of the Army.

FREDERICK T. COLWELL, editor of the American Gas Association proceedings for the past 6 years, has joined the advertising and circulation department of Crowell-Collier's Publishing Co., New York City.

C. H. KEPLINGER, production engineer, Shell Oil Co., Inc., Tulsa, has been transferred to the eastern division office at Centralia, Ill. Mr. Keplinger has been very active in the A.I.M.E. and the A.P.I. for a number of years.

BERT R. HAIGH, oil man of Midland, Tex., has been named air-raid warden for Midland County, and is setting up an organization to inaugurate a full air-raid-warning system in the area. He has named several assistants.

I. C. BECHTOLD, process engineer of the Fluor Corp., Ltd., discussed "Hydrocarbon Hydrates" and W. C. FORAN of the Filtrol Corp. talked on "Oil for the Axis" at the March meeting of the California Natural Gasoline Association.

W. B. FERGUSON, formerly geologist for Sun Oil Co. at Brenham, Tex., has organized the Fluorographic Exploration Co., with offices in Houston, Tex. Mr. Ferguson is president of the company and S. RUSSELL CASEY, geologist for the Woodley Petroleum Co., is vice president.

HEATH RENFRO, formerly at Houston, Tex., for the Texas Railroad Commission, is now in the production department of Tide Water Associated Oil Co., in Texas.

A. W. CATES, chemist for Sinclair Refining Co. at its Fort Worth, Tex., refinery, discussed "Specialized Motor Fuels" before the weekly meeting of the Technical Club last week in Fort Worth.

J. M. KIRBY, for many years associated with Standard Oil Co. of California, has recently assumed the position of chief geologist, Standard Oil Co. of British Columbia, Ltd., with headquarters in Calgary, Alta., Canada.

C. V. LEE, president of Lee Petroleum Co., San Angelo, Tex., is confined to a hospital in that city for treatment of a kidney disorder. At the end of the week his condition was reported as serious but not critical.

CLAUDE P. PARSONS, vice president, Halliburton Oil Well Cementing Co., Duncan, Okla., addressed the student section of the American Institute of Mining and Metallurgical Engineers at University of Texas recently, on "Caliper Logging."

ODELL OLSON of Brady, Tex., has accepted a position as geologist with the Oil and Gas Division of the Texas Railroad Commission. Mr. Brady returned from Arabia in December 1941, after spending 2 years doing geological work in that country.

MILTON G. McKEE, former Carter Oil Co., employe, has joined the Standard Oil Co. of Venezuela, as tool pusher in the Caripito area. Mr. McKee recently returned from Hungary and accepted the Venezuela job while on vacation in the United States.

War Adds to Duties

Greater attention directed to special hydrocarbons for production of strategic materials has added materially to the duties of J. O. Sue, Houston, Tex., superintendent of the natural gas and natural gasoline department of Humble Oil & Refining Co. Mr. Sue's familiarity with the basic problems is complete for he has been in his present position since April 1, 1935.

J. O. SUE

He was born in Stephens County, Texas, one of the first areas in Texas to produce large amounts of natural gasoline, on December 27, 1889. After completing schooling at Cisco, Tex., he worked for a short time in abstract offices in Stephens and Eastland counties. Later, he accepted a position in a bank and followed that line of business until joining Humble's production department as a clerk. Mr. Sue received several promotions before he was placed in charge of gas testing. In January 1929, he was transferred to Humble's Houston, Tex., headquarters.

Before moving to Houston, Mr. Sue was actively interested in civic matters and is one of the charter members of the Rotary Club at Cisco. He is past Exalted Ruler of the Elks Lodge at Cisco and served on several state and national committees of that fraternal organization. Before entering the oil business, Mr. Sue married Gertrude Murrell of Eastland, Tex. They have one daughter, Margaret, who is the wife of Dr. W. M. Rust, Jr., of Houston. A son, J. O. Sue, Jr., is in the U. S. Army Air Corps.

Mr. Sue's hobbies are entertaining his grandson and playing golf. He excels in both endeavors, friends say. He spoils the grandson and talks a good game.

NORMAN S. HINCHEY, formerly with the Missouri Geological Society, has joined Shell Oil Co., Inc., at Centralia, Ill.

LEVI ACKLEY, superintendent, E. H. Moore, Inc., Hardan City, Okla., is now with the War Production Board, in Tulsa.

R. C. MOCK, JR., formerly scout at Houston, Tex., for Houston Oil Co., has been transferred from the geological to the lease department. His headquarters remain at Houston.

JOHN H. WEST, who has been with the H. F. Wilcox Oil and Gas Co., at Bristow, Okla., has been transferred to its Seminole property. Mr. West is also a pastor of the Free Will Baptist Church.

J. E. HARRINGTON, who started his service with General Petroleum Corp. as a clerk and receptionist at the production office of the company at Vernon, has been appointed field engineer in the production department specializing in boiler operation and maintenance.

EARL HOBITZELLE has been elected to the board of directors of the Republic Natural Gas Co. Other directors elected were W. J. MORRIS, F. M. MAYER and W. H. WILDES, of Dallas, Tex.; R. O. FOULSTON and RALPH J. PRYOR, of Wichita, Kans., and W. W. TURNER, Chicago.

E. J. GORMAN, general agent for Sun Oil Co. in Oklahoma and Kansas, has been awarded a service pin, representing 25 years of continuous service with his company. The pin was presented by T. W. PARTIN, retired general superintendent, who recently was given a 45-year pin. Mr. Gorman joined the old Twin State Oil Co. in 1917, and when Twin States was absorbed by the Sun company in 1937, he was vice president for the northern Mid-Continent.

PATRICK E. FLETCHER has been transferred by Atlantic Refining Co. from Longview to Corpus Christi, Tex.

Shifts: JOSEPH A. HEALY, engineer, Belcher Production Co., Miami to Coral Gables, Fla.; HUB ASTON, engineer, Sun Oil Co., Corpus Christi to Farmersville, Tex.; H. W. MITCHELL, superintendent, Shell Oil Co., Inc., Pampa to Wichita Falls, Tex.; R. M. SWESNIK, engineer, Tex Harvey Oil Co., Palestine, Tex., to Oklahoma City, Okla.; D. C. ALBERS, engineer, Ohio Oil Co., Marshall, Ill., to Midland, Tex.; D. W. WILLIAMS, Cities Service Oil Co., Madison, Kans., to Bradner, Ohio; D. H. WILKINSON, superintendent, Phillips Petroleum Co., Attica to Duquoin, Kans.; J. A. TRAUGHBER, superintendent, Transwestern Oil Co., Hutchinson, Kans., to Oklahoma City, Okla.; R. N. BILLS, engineer, Amerada Petroleum Corp., Thibodaux to Houma, La.; H. B. McCULLOUGH, engineer, Gulf Refining Co., Lebanon to Nebo, Mo.; H. I. JOHNSON, superintendent, Bistate Oil Co., Ferdig, Mont., to Tacoma, Wash.; J. M. BRADLEY, superintendent, Plantation Pipe Line Co., Greenville, S. C., to Gastonia, N. C.; JACK ODEN, geologist, Magnolia Petroleum Co., Norman to Ardmore, Okla.; R. N. HIRSCH, engineer, Shell Oil Co., Inc., Healdton, Okla., to Pampa, Tex.; PERRY E. LARSON, engineer, Shell Oil Co., Inc., Bristow, Okla., to Wichita Falls, Tex.; L. K. LANEY, engineer, Texas Co., Houston, Tex., to New Orleans, La.; M. H. McKINNEY, Lago Oil & Transport Co., Wichita Falls, Tex., to Aruba, Netherlands West Indies; C. W. THOMPSON, engineer, Texas-Empire Pipe Line Co., Mattoon, to Virginia, Ill.; E. E. BRIER, engineer, Continental Oil Co., Midland to Huntsville, Tex.

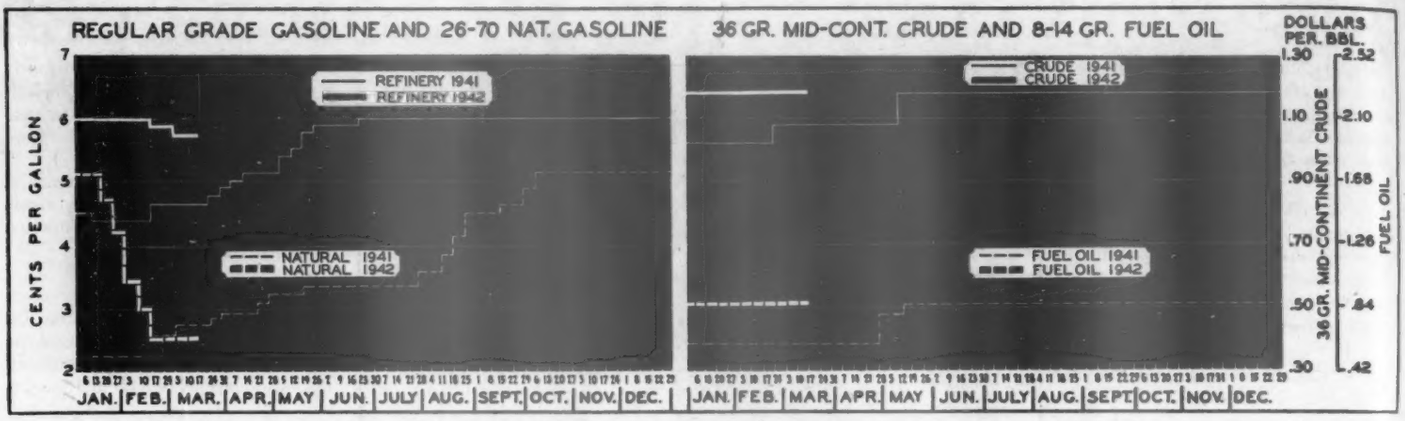
THOMAS R. KURTZ, manager, Shell Oil Co., Inc., marketing operations department, has been assigned to the staff of Admiral Adolphus Andrews, of the Third Naval District. He was commandant of the naval academy from 1921-1924. CHARLES E. SMITH, former division manager of Shell's Baltimore division, has been assigned to the Office of Chief of Naval Operations in Washington, D. C. P. W. ENGELS, assistant operations manager, has been appointed to succeed Captain Kurtz as manager of marketing operations.

CLYDE L. ROBINSON, production engineer for Gulf Oil Corp. in its division offices at Fort Worth, Tex., has returned to his desk after a 2-week illness which confined him to his home.

E. J. GANN, formerly land man for the Red Bank Oil Co., Houston, Tex., has joined the land department of Danciger Oil & Refineries, Inc., at Fort Worth, Tex.

E. L. EARL, formerly geologist with the Fohs Oil Co., has accepted the position of chief geologist with the Crown Central Petroleum Co. with headquarters in Houston, Tex.

In a recent address before the American Society of Mechanical Engineers, JOHN D. GILL, economist, Atlantic Refining Co., told his hearers that the United States' 380,000 oil wells could, if need be, produce more oil than the whole world produced last year by abandoning temporarily the policy of conservation. He made the statement after reckoning up the oil production lost to the Allies as a result of the seizure of Borneo and Sumatra by the Japanese.


REGULAR GRADE GASOLINE AND 26-70 NAT. GASOLINE
CENTS PER GALLON
REFINERY 1941
REFINERY 1942
NATURAL 1941
NATURAL 1942
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.
36 GR. MID-CONT. CRUDE AND 8-14 GR. FUEL OIL
DOLLARS PER BBL.
CRUDE 1941
CRUDE 1942
FUEL OIL 1941
FUEL OIL 1942
36 GR. MID-CONTINENT CRUDE
FUEL OIL
JAN. FEB. MAR. APR. MAY JUN. JULY AUG. SEPT. OCT. NOV. DEC.

MARKET DEVELOPMENTS . . .

Gulf Coast

HOUSTON, Tex., Mar. 16.—Signs of some improvement in the acute gasoline situation which has prevailed in the Gulf Coast refinery markets for several weeks due to the lack of transportation, was indicated this week. Sale of one cargo of 72-74 octane gasoline at 5.75 cents was reported. This is the first open-market sale of gasoline reported in several weeks and the price is somewhat of a surprise in view of the large stocks of distress material accumulated during the past several weeks. Prior to this sale it was the general opinion that gasoline could be purchased at a concession price provided prompt loading was a factor. Whether prices have been strengthened by anticipation of better transportation prospects is not known. Market observers feel there has been some improvement in the situation during the past 10 days. Allocation of tankers as ordered by OPC, plus a continued improvement in tank-car movement, may provide some relief.

Fuel oils continued to improve and sellers were having little difficulty in getting ceiling prices for material. Just how much material was being moved to the East Coast was not disclosed, but it is said to have increased, and there has been improvement in tank-car and barge movement on shorter hauls. Fuels were scarce and some observers are of the opinion that ceiling prices on certain materials will be raised in the near future.

Mid-Continent

EXTENSIVE sales of kerosene, distillate fuel and residual burning oils for movement to the East Coast have been made in the Mid-Continent refinery market during the past 2 weeks. Estimates are that more than 3,000 cars of fuel oils have been sold in this territory for eastern movement as promptly as loadings can be completed. Eastern buyers are attempting to make their purchases in the Mid-Continent from refiners who are willing to transfer their tank cars for three or four additional hauls into East Coast territory. This contingency is flexible, however, and is not necessarily applied without exception. Current tank-car prices in the Mid-Continent refining area are paid by eastern shippers without protest.

While all Mid-Continent sellers have not been willing to relinquish use of their owned or leased tank cars for more than one trip to the eastern seaboard, enough rolling stock has been committed to that service to tighten the transportation conditions between inland points.

Motor-fuel movement from the Mid-Continent is relatively brisk. In fact, refiners are unable to load promptly against all shipping instructions because of the shortage of cars.

Natural-gasoline prices in the Group 3 territory are steady at 2.25 cents per gallon for 26-70 material. Demand is in reasonably close balance with production and stocks are reported at satisfactory levels. Pressure from the North Texas natural-gasoline market where prices are 2 cents per gallon prevents any improvement that might otherwise develop in the Group 3 (Oklahoma and Kansas) territory.

SENTENCE SUMMARIES

MID-CONTINENT: Refiners have sold more than 3,000 cars of fuel oils for eastern movement.

EAST COAST: Record tank-car movement into area fails to halt decline in stocks. Curtailed gasoline deliveries ordered, may retard stock slump.

GULF COAST: Cargo of gasoline sold at quoted market tends to relieve pressure, may reflect resumption of trading.

PACIFIC COAST: Motor-fuel prices soften. Exports at standstill. Stocks rising. Residual fuels firm.

PENNSYLVANIA: Markets for all products firm. Stocks of many products at lowest levels in recent years.

A.P.I. REFINERY REPORT

Week Ended March 7, 1942

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks Gasoline	Residual	Gas oil
East Coast	544	18,408	6,976	7,741
Appalachian	144	4,018	611	365
Ind., Ill., Ky.	679	22,662	3,919	3,007
Okla., Kans., Mo.	322	10,532	1,895	850
Inland Texas	189	3,715	1,169	77
Texas Gulf	815	21,403	9,102	7,401
Louisiana Gulf	141	4,527	2,135	1,503
N. La. and Ark.	79	1,218	296	123
Rocky Mountains	85	2,460	618	306
California	532	17,716	60,810	12,013
Total Mar. 7, 1942	3,530	106,668	87,531	33,386
Total Feb. 28, 1942	3,675	105,635	88,285	34,547
Total Mar. 8, 1941	3,499	96,075	95,836	33,445

Note: Refinery runs and stocks for week ended March 14, 1942, appear on Trends page.

CRUDE-OIL STOCKS

(Bureau of Mines estimate)

Week ended:	Bbl. of crude*
March 7, 1942	260,064,000
February 28, 1942	259,373,000
March 8, 1941	264,001,000

*Excludes heavy, unrefinable crude in California.

East Coast

NEW YORK, Mar. 16.—With the fuel oil season nearing its close, the oil industry on the East Coast is turning its attention more to gasoline. A 20 per cent cut in motor-fuel distribution ordered by WPB has helped clear outlook for adequate supplies. A disturbing element was introduced by the decline of almost 600,000 bbl. in motor-fuel stocks in the first week of March.

The slump of gasoline inventories was disturbing to both the short-range and long-range outlooks. If declines in gasoline stocks of this magnitude were permitted to continue throughout March, stocks would have been down to 16,300,000 bbl. at the end of the month. This would contrast with a total of 21,113,000 bbl. as of March 31, 1941.

The long-range outlook was affected inasmuch as increased gasoline shipments would be needed to meet demand. Higher gasoline shipments would have necessitated reductions in movement of fuel oil. This contingency seems now to have been met by restricting motor-fuel consumption.

All East Coast stocks dropped another 2,671,000 bbl. in the week ended March 7 even though rail shipments into the district rose to an all-time high of 435,086 bbl. These shipments were equal to about 25 per cent of the current East Coast demand which is reported to be averaging 1,720,000 bbl. per day. It was up 10 per cent in January and 5 per cent in February over the corresponding 1941 month.

Pacific Coast

LOS ANGELES, Calif., Mar. 16.—Motor-fuel prices gave ground this week, yielding to the influence of increasing stocks in the hands of independent refiners. The full impact of reduced off-shore shipments is exerting strong pressure on gasoline. Small refiners on the Pacific Coast are not in financial or physical position to carry excessive stocks over a protracted period.

The break in prices was mostly on the low side of the market and to low octane material but it is considered a matter of time only until the general structure is adjusted downward. Material was offered by several suppliers of low octane gasoline at .25 cent under previous lows. The concession offerings in some directions were as much as .75 cent below previous quotations.

Fuel oils are in firm demand at unchanged prices. The natural-gasoline market has not followed reductions in refinery motor-fuel prices so far but the sympathetic relationship between the two materials may react in the near future.

REFINERY AND TANK-WAGON PRICES

(Prices as of March 17)

Refinery Gasoline

Octane (A.S.T.M.):	†80	78	74-76	72-74	68-70	63-66	60 & lower
Mid-Continent*				5.625-5.875		5.250-5.500	4.875-5.125
Pennsylvania			6.750-7.000				
Gulf Coast‡	6.00-6.50			§5.750-6.250	§5.750-6.250	§5.250-5.750	§5.000-5.500
Northeast Coast				8.300	8.300		
Pacific Coast		7.000-7.500	6.750-6.875	6.500-6.750	6.000-6.500	5.250-5.500	4.750-5.000

*Basis Group 3. †1939 C.F.R. (research method). ‡Integrated companies restricted to lowest prices. §Unleaded.

Quotations are f.o.b. plant in cars and in cents per gallon except where otherwise noted. They are exclusive of the federal excise taxes of 1.5 cents a gallon on gasoline and 4.5 cents a gallon on lubricating oils, and do not include marine lighterage charges.

Natural Gasoline

Grades:	26-70	18-55	75-85(350-375)
Oklahoma (Group 3)	2.250	2.625-2.750	
North Texas	2.000	2.375-2.500	
North Louisiana	2.125	2.500-2.625	
California			4.750-5.000

Kerosene and No. 1 Fuel Oil

Gravity:	46	45	42-44	41-43	38-40
Mid-Continent*			4.500-4.750	4.375-4.625	
North Louisiana			4.625-4.750		
Pennsylvania	6.250	6.125-6.250			
California				4.500-6.000	4.500
Northeast Coast				5.300	
Gulf Coast				3.875	

*Basis Oklahoma Group 3.

Tractor, Diesel, and Bunker Fuel Oil

Specifications:	46-48° G.	24 D.I.	48-52 D.I.	58 & above	Diesel bunkers	Bunker C
Mid-Continent*	4.125					
California		2.750-4.000			‡$1.35-1.45	$0.80-0.90
Gulf Coast			4.000	4.125	1.45	0.85
Northeast Coast				5.200	2.15	1.35
North Louisiana						†0.80-0.85

*Basis Oklahoma Group 3. †10-14° gravity. ‡Pacific Specification 200.

Furnace Oil, Gas Oil, Fuel Oil

	No. 2	No. 3	No. 5	No. 6
Mid-Continent*	3.500-3.625	3.375-3.500	$0.85	$0.85
Pennsylvania (West)	5.625-5.875	5.375-5.875	†5.250-5.500	
Northeast Coast	5.2	5.2	1.65-75	1.35
Pacific Coast	5.5	5.5	‡0.75-95	§0.80
Gulf Coast	3.875-4.0		1.65	0.85

*Basis Oklahoma Group 3. †36-40 gravity fuel oil. ‡Pacific Specification 300. §Pacific Specification 400.

Lubricating Oils

Bright and Steam Refined

OKLAHOMA (Group 3)—		
200-210 D, 10-25		27.00
150-160 D, 0-10		23.00
120-125 D, 0-10		22.00
Steam refined:		
600 dark green (untreated)	9.00	9.50
PENNSYLVANIA—		
Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		30.50
15 pour point		29.50
25 pour point	25.00	28.00
Steam refined:		
600	15.00	16.00
650	15.50	16.50
600 flash	16.00	17.50
630 flash	17.00	17.50

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—	
0-10 pour point:	
200-3	15.00
300-3	18.00
500-3	19.50
600-3	20.00

Note: Viscous neutrals, 10-25 pour, quoted 0.5 cent under 0-10 oils.

Wax

(Cents per pound)

OKLAHOMA (Group 3)—	
124-126 (A.m.p.) w.c. scale	4.350-4.550
PENNSYLVANIA (inland refineries)—	
122-124 (A.m.p.) w.c. scale	4.250
124-126 (A.m.p.) w.c. scale	4.250

Neutral Oil

CALIFORNIA—		
Pale oils:		
200-2½-3	7.00	7.75
400-3-4	7.25	8.00
600-3-4	8.75	11.00
Red oils:		
200-4-5	7.00	7.75
400-5-6	9.00	11.00
500-900, 5-6½	9.25	11.25
GULF COAST—		
Pale oils:		
200-3	8.50	8.75
300-3	9.00	9.25
500-3½	9.75	10.00
750-3½	10.00	10.25
2,000-4	10.50	10.75
3,000-4	12.25	12.50
PENNSYLVANIA—		
150 vis. at 70° F., 3 color, 400-405 flash:		
Zero pour point		38.50
10 pour point		37.50
15 pour point		36.50
25 pour point		31.00
200 vis., at 70° F., 3 color:		
Zero pour point		40.50
10 pour point		39.50
15 pour point		38.50
25 pour point		33.00
NEW YORK—		
Wax in bags fully refined:		
130-132 (A.m.p.) wax		6.250
133-135 (A.m.p.) wax		6.550
Crude scale:		
124-126 (A.m.p) w.s.		4.350-4.455
124-126 (A.m.p.) y.s.		4.350-4.455

EXPORT PRICES

Gasoline—60-62° Gravity, Maximum 400 End Point

Octane:	72-74	68-70	65-66	60
Gulf Coast	6.500	6.250-6.500	5.875	5.625
Pacific Coast		6.125-6.500	5.875-6.000	5.500-5.625

Distillate and Fuel Oil

	Kerosene	Diesel fuel				Bunker
	41-43	24 G.	48-52 D.I.	58 D.I.	Bunkers	C grade
Gulf Coast	4.000-4.250		4.125-4.375	4.375	$1.65-80	$0.85-95
Pacific Coast	4.750-5.000	1.25-30			†1.35-45	*0.80-90

*Pacific Specification 400. †Pacific Specification 200.

Lubricating Oils

	Neutral oils		Bright and cylinder stocks		
	200-3	150-3	200-3	150-3	600&630 S.R.
Mid-Continent	16.8		28.8	24.8	
Pennsylvania	43-50	41-46	36-37	36-37	26.5-27

GASOLINE AND KEROSENE TANK-WAGON PRICES IN 50 CITIES

(Gasoline prices based on regular grades, tax included, undivided dealer)

ATLANTIC AND NEW ENGLAND

(Socony-Vacuum Oil Co., Inc., and Atlantic Refining Co.)

	Dealer tank wagon	Combined tax	Kerosene tank wag.
Baltimore, Md.	14.55	5.50	8.70
Boston, Mass.	14.00	4.50	8.00
Burlington, Vt.	16.00	5.50	
Buffalo, N. Y.	15.30	5.50	8.80
Dover, Del.	15.80	5.50	10.50
Hartford, Conn.	14.70	4.50	
Manchester, N. H.	16.40	5.50	9.00
Newark, N. J.	13.80	4.50	7.90
New York, N. Y.	15.20	5.50	8.00
Philadelphia, Pa.	15.30	5.50	10.15
Pittsburgh, Pa.	15.80	5.50	10.50
Portland, Me.	15.40	5.50	8.10
Providence, R. I.	14.10	4.50	7.80
Washington, D. C.	13.80	3.50	9.20
Average 14 cities	15.07	5.07	8.89

(All prices undivided dealer basis.)

CENTRAL

(Standard Oil Co. of Indiana, Standard Oil Co. of Ohio, Continental Oil Co. and Texas Co.)

	Dealer tank wagon	Combined tax	Kerosene tank wag.
Chicago, Ill.	14.10	4.50	10.30
Cleveland, Ohio	15.00	5.50	*9.00
Dallas, Tex.	13.00	5.50	7.00
Des Moines, Iowa	11.90	4.50	9.80
Detroit, Mich.	14.40	4.50	9.60
Fargo, N. D.	16.90	5.50	11.30
Huron, S. D.	16.30	5.50	10.70
Indianapolis, Ind.	15.20	5.50	9.80
Little Rock, Ark.	17.50	8.00	10.00
Milwaukee, Wis.	16.10	5.50	10.50
Minneapolis, Minn.	15.40	5.50	10.30
Omaha, Neb.	15.40	6.50	9.80
Tulsa, Okla.	16.50	7.00	8.50
Wichita, Kans.	12.70	4.50	8.00
Average 14 cities	15.03	5.57	9.61

*Includes 1-cent state tax.

SOUTHEASTERN

(Standard Oil Companies of New Jersey, Kentucky and Louisiana)

	Dealer tank wagon	Combined tax	Kerosene tank wag.
Atlanta, Ga.	18.50	7.50	9.00
Birmingham, Ala.	19.60	8.50	9.00
Charleston, S. C.	18.05	7.50	
Charleston, W. Va.	18.35	6.50	11.50
Charlotte, N. C.	19.20	7.50	9.50
Jacksonville, Fla.	18.50	8.50	8.00
Jackson, Miss.	18.00	7.50	8.50
Louisville, Ky.	17.00	6.50	8.50
Memphis, Tenn.	17.75	8.50	10.50
New Orleans, La.	17.25	8.50	*10.00
Norfolk, Va.	16.55	6.50	10.20
Average 11 cities	18.07	7.59	9.47

*Includes 1-cent state tax.

MIDWESTERN

(Continental Oil Co.)

	Dealer tank wagon	Combined tax	Kerosene tank wag.
Albuquerque, N. M.	17.50	7.50	10.00
Boise, Idaho	20.10	6.50	16.50
Casper, Wyo.	17.00	5.50	12.00
Denver, Colo.	14.50	5.50	11.00
Helena, Mont.	17.00	6.50	13.00
Phoenix, Ariz.	18.50	6.50	12.50
Reno, Nev.	17.50	5.50	13.50
Salt Lake, Utah	18.50	6.50	14.50
Average 8 cities	17.58	6.25	12.88

PACIFIC COAST

(Standard Oil Co. of California)

	Dealer tank wagon	Combined tax	Kerosene tank wag.
Portland, Ore.	17.00	6.50	13.50
San Francisco, Calif.	14.50	4.50	11.50
Seattle, Wash.	17.00	6.50	13.50
Average 3 cities	16.17	5.83	12.83
Average 50 cities	16.17	5.96	10.15
Average last week	16.14	5.96	9.87

Rocky Mountain Area

(Continued from Page 87)

the Tensleep. It then swabbed 6 bbl. of oil and 6 bbl. of water a day. Drilling then was resumed and it is making hole at 5,094 ft.

WYOMING COMPLETIONS

East Ferris field, Carbon County: Sinclair-Wyoming 25-C SE SE NW 25-26n-87w, T.D. 5,005 ft., top Tensleep 4,838 ft., sand hard, tight and dry, plugged and abandoned after testing upper horizons.

Lance Creek field, Niobrara County: MacKinnie Oil & Drilling 1 OPC SW SW SW 25-36n-65w, T.D. 4,366 ft., 7-in. 4,348 ft., swabbed 48 bbl. in 5 hours from basal Sundance at 4,345-66 ft., preparing to test on the pump.

Lost Soldier field, Sweetwater County: Sinclair-Wyoming No. 104, C SW NW 11-26n-90w, T.D. 4,414 ft., 7-in. 4,060 ft., swabbed 105 bbl. first 18 hours through tubing from Tensleep, top 4,060 ft.

MONTANA COMPLETION

Cut Bank field, Glacier County: Frances Oil Co. 3 Tribal-197 NW SW NW 30-32n-5w, T.D. 3,014 ft., 7-in. 2,975 ft., Cut Bank sand 2,970-3,013 ft., main pay 3,005-13 ft., swabbed 171 bbl. first 24 hours.

Canadian Fields

(Continued from Page 83)

ONTARIO COMPLETIONS

Malahide Township: Union Gas 85, lot 25 Con. 5, T.D. around 1,050 ft., dry hole.

Raleigh Township: Dominion Natural Gas 1 Knott, lot 16, Concession 13, T.D. 1,650 ft., dry hole.

Walpole Township: Dominion Natural Gas 2 Murray, lot 23 Concession 8, T.D. 890 ft., 20,000 cu. ft. daily. P. L. Jackson 4 Vokes, lot 4 Concession 2, T.D. 1,010 ft., dry hole.

Crude-Oil Prices

(Complete crude-price tables are published in the first issue of each month.)

Representative selected crude prices from all sections of the country appear below:

East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana	1.18
Smackover, Arkansas, heavy	.83
Illinois basin	1.37
Pecos County, Texas	.95
Lance Creek, Wyoming	1.12
Bradford, Pennsylvania	2.75

Gravity Schedules

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

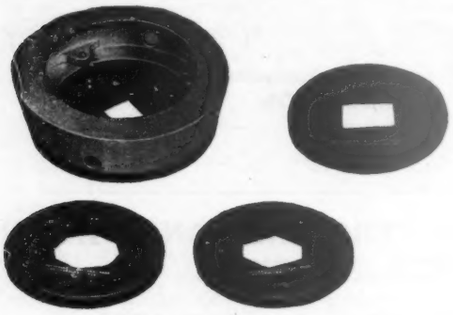
Gravity	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast, Texas	West Texas*
18-18.9	$0.80	...	...	...
19-19.9	.84		$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9		1.07	1.30	.94
32-32.9		1.09	1.32	.96
33-33.9		1.11	1.34	.98
34-34.9		1.13	1.36	1.00
35-35.9		1.15	1.38	1.02
36-36.9		1.17	1.40	1.04
37-37.9		1.19	1.42	1.06
38-38.9		1.21	1.44	1.08
39-39.9		1.23	1.46	1.10
40 and above		1.25	1.48	1.12

*Includes Lea County, New Mexico.

EQUIPMENT PROGRESS...

Patterson-Ballagh Provides New Types of Kelly Wipers

Patterson-Ballagh Corp., Los Angeles, Calif., is making available several new types of kelly wipers. These now include octagonal and hexagonal, as well as the conventional square types. Fittings have been developed for installation in Baash-Ross and Emsco types of kellys.



New Patterson-Ballagh kelly wipers

The rubber wiping unit is bolted at the bottom of the kelly bushing and can be quickly removed for inspection. Arrangements can be made by purchasers of the bushings for installation of these wipers at the factories.

Goodrich Oil Hose Now Made Only With Synthetic Rubber

An added construction for its Type 400SS oil hose, with elimination of all natural rubber and substitution of its own synthetic rubber, Ameripol, is announced by the B. F. Goodrich Co., Akron, Ohio.

This type hose is also made with an Ameripol synthetic rubber tube, but with the cover and rubber used to impregnate the body plies of natural rubber. The new design incorporates Ameripol in every part of the hose.

All the hose is thus made resistant to the action of oils, gasolines or other solvents of natural rubber. New construction also affords stronger adhesion of all parts with an additional margin of safety against ply separation.

TRADE LITERATURE

PENNSYLVANIA FLEXIBLE METALLIC TUBING CO., Seventy-second Street and Powers Lane, Philadelphia, Pa.—Eight-page pamphlet, Bulletin 71, containing the 1942 standards for all-metal flexible assemblies used by the diesel industries for exhaust pipes, air-intakes, and supply lines.

R-S PRODUCTS CORP., 4530 Germantown Avenue, Philadelphia, Pa.—Four-page bulletin, No. 11-C, explains low unit cost in small or large quantities and the saving of costly "nuisance" machine setups. It contains detailed drawings, sizes, styles, and easy method of ordering.

PENNSYLVANIA PUMP & COMPRESSOR CO. Easton, Pa.—Seventeen-page pamphlet and catalog, Bulletin 238, listing and describing Thrustfre multi-stage centrifugal pumps in the 4, 5, 6, and 7-stage series.

THE FOXBORO CO., Foxboro, Mass.—Catalog 22-A, 32 pages, covering instruments for the measurement and recording of industrial pressures of all kinds, in ranges from 1 in. of water to 20,000 lb. A complete list of standard ranges is given, accompanied by full-size reproductions of specimen charts. Various types of pressure-measuring elements are illustrated with explanations of conditions under which each is most suitable. Methods of instrument mounting, types of cases available, integral electric systems, and accessory equipment are described.

THE ATLAS LUMNITE CEMENT CO., 135 East Forty-second Street, New York City.—A 16-page booklet describing the use of Atlas Lumnite cement in making concrete. Detailed information is given on placing and finishing concrete floors ready for service the next day.

INTERNATIONAL HARVESTER CO., 180 North Michigan Avenue, Chicago, Ill.—Four-page illustrated pamphlet describing a new, small engine, the International Type LB. It contains charts and tabular data.

Oil and Grease Accumulations Removed by Sweeping Compound

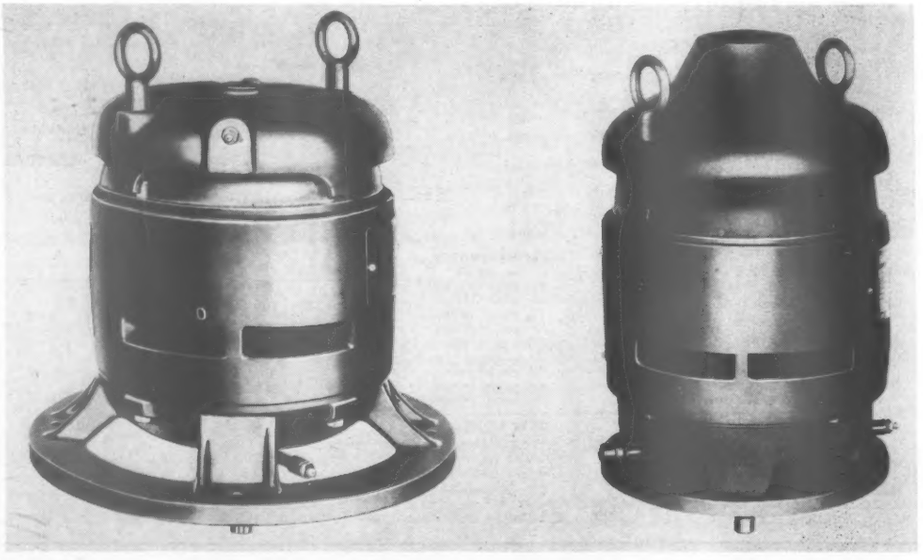
The Philip Carey Manufacturing Co., Cincinnati, Ohio, has developed a new sweeping compound that effectively removes oil and grease deposits from floors and driveways. Known as "Carey Grease Ball Asbestos Sweeping Compound," it is an inexpensive asbestos product, contains no acids or caustics, and will not cause erosion. It eliminates the danger of slipping and fire hazards due to oil and grease accumulations.

The compound is readily applied by sprinkling it on the deposit. Heavy grease may require soaking first with kerosene. Scrubbing with a broom causes absorption of the oil and grease which then can be swept away. The compound can be reused.

GENERAL ELECTRIC ADDS THREE NEW TYPES OF MOTORS

Three new motors, a vertical general-purpose polyphase motor, a vertical shielded polyphase motor (1 to 20 hp.), and a vertical shielded single-phase motor (1 to 5 hp.), have been added to the "Tri-Clad" family of General Electric Co., Schenectady, N. Y. The shielded-type motors are especially suited to pumping applications. The general-purpose motor is suitable for use in the machine tool industry as well as for agitators, mixers, and similar applications.

The compact, cast-iron frame and cover of the general-purpose motors are designed to give added protection to electrical parts without adding materially to the over-all height. The use of Formex wire, new punchings and coil shapes, double-end ventilation, and balanced design are features contributing to long life.



General Electric Co.'s new general-purpose motor (left), and a shielded-type motor (right)

Accurate alignment of the motor to the driven unit is assured by machined rabbets on the stator frame and base. Rotating weight and thrust are solidly transmitted to the supporting base through the lower bearing, which is fitted to a one-piece base. Bearings are of the deeply grooved type, and are encased in machined cast-iron housings.

All openings in the general-purpose motor are shielded to bar the entrance of chips or other falling objects. Many features of this Tri-Clad motor contribute to convenience of operation. Accessibility of grease fittings allows rapid lubrication without disassembly of the motor; location of eyebolts makes the motor easy to handle; speed measurements are taken by removing the monogram cap from the upper end shield; a variety of bases makes it possible for this motor to meet many applications and mounting requirements.

The polyphase shielded-type motors are available in either solid-shaft or hollow-shaft construction, while the single-phase shielded-type motors are available only in solid-shaft construction. Both shielded types are for normal-thrust or high-thrust applications. The cover is constructed to deflect dripping liquids and falling objects. All openings in the stator frame and end shields are protected against the entrance of splashing liquids. Air is discharged downward at low velocity, thus permitting little or no dust disturbance around the motor.

These motors are suitable for outdoor operation except where extremes of moisture, dust, or other harmful agents make the selection of fan-cooled motors more economical. All frame sizes have common mounting dimensions, making possible interchangeability of many horsepower and speed combinations, including single-phase ratings. The motors can be rotated to any one of four base positions without modification of the supporting structure.

To facilitate installation and impeller adjustment in

pump installations, the motors can be obtained with hollow shafts. In such installations, the pump shaft passes through the hollow motor shaft and is supported on the upper end by an adjusting nut. Torque is supplied to the pump shaft either by a nonreversing ratchet or jaw-type coupling.

The nonreversing ratchet eliminates motor reversal which might result from the reversal of phase rotation, or from the backward flow of water through a pump, which would cause turbine action. The jaw-type coupling is a simple means of connecting the motor to the driven machine, where pump reversal is unimportant.

AMONG EQUIPMENT MEN...

Two Promotions Are Announced For Kobe Executive Personnel

C. M. Rader, Mid-Continent division manager, Kobe, Inc., has been appointed general sales manager, and A. M. Smith, who has been connected with service and development of the Kobe hydraulic-pumping system, has been made chief engineer, C. J. Coberly, president of the company, has announced. Both will have headquarters at the general offices of the company in Huntington Park, Calif.

C. M. RADER

As general sales manager, a newly created position, Mr. Rader will be responsible for all foreign and domestic sales and field-operating activities in connection with the various products of the company. Mr. Smith will direct research, design, metallurgy, and product engineering.

Mr. Rader has been associated with Kobe, Inc., as Mid-Continent division manager since 1937. He previously had become interested in the possibilities of hydraulic oil-well pumping while petroleum engineer at Oklahoma City, Okla., for Phillips Petroleum Co. It was at the time he took over the latter position in 1931 that the Oklahoma City field was presenting its first difficult production problems.

A. M. SMITH

He is a graduate of the University of Minnesota, school of civil engineering. Following his graduation he entered the Officer's Training Course at Fort Snelling, Minnesota, and later served with the 20th Engineers in France during 1917-18. Returning from overseas, he joined Midwest Refining Co. as district petroleum engineer in Wyoming, Montana and Colorado. He resigned this position in 1925 to engage in general engineering practice in Florida, but shortly became associated with Indian Territory Illuminating Oil Co. as petroleum engineer at Seminole, Okla. Later he moved to Oklahoma City as assistant to the vice president and general manager of the company.

Mr. Smith has had a long and practical field experience in hydraulic engineering. He joined Mr. Coberly in production and experimental work with the Purox Co. of California following close of World War I, in which he served as an ensign in the Naval Reserve. Until 1929, he was active in hydraulic power development and construction work in California and at that time became active in the development of hydraulic-machine tool feeds in both Los Angeles, Calif., and Detroit, Mich. He became associated with Kobe, Inc., in 1934, and was concerned with the first developments of the Kobe pumping system. He is a graduate of Stanford University.

Rinehart's Report Launches New Service on Washington

Rinehart's Oil Reports announces the inauguration of a new service, the daily Washington Oil Letter, published from newly opened offices in the National Press Building, in the heart of downtown Washington.

Ted Kellogg, veteran Washington oil news reporter, is in charge of the office, under direct supervision of Arthur S. Davenport, president of Rinehart's. Prior to joining the Rinehart organization, Mr. Kellogg wrote oil news, analysis, and comments for both weekly and daily publications in the oil industry, and has also served as a correspondent for southern dailies as well as a local reporter on Washington dailies.

The new publication will be issued every afternoon except Sunday, and will be delivered to the "oil country" by first-class mail. The heading of the new letter sets forth that it will be a "daily news and analytical service devoted to petroleum."

Brown Chosen Vice President In Allis-Chalmers Promotion

Edwin H. Brown, manager and chief engineer of the engine and condenser department, Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has been elected vice president in charge of engineering and development.

EDWIN H. BROWN

Mr. Brown has been with this company since 1906, entering the company's training course for graduate engineers following his graduation from the University of Nebraska. Upon completion of the 2-year engineering apprentice course, he served in various capacities in 1935, assuming the position he has just relinquished. M. L. Carson, sales engineer, succeeds him as sales manager and chief engineer of the engine and condenser department.

Gordon Crawford Is Promoted By Wickwire Spencer Company

Appointment of Gordon L. Crawford, district sales manager, Buffalo, N. Y., as assistant general sales manager, has been announced by E. C. Bowers, president, Wickwire Spencer Steel Co., New York. Mr. Crawford will make headquarters at New York, where he will continue as sales manager of the structural products division in connection with his new duties.

G. L. CRAWFORD

Mr. Crawford joined this company as a salesman at Chicago in February, 1927. He later was transferred to Tulsa, where he served until 1935, when he was transferred to the sales office in New York. He went to Buffalo in May, 1940. He studied mechanical engineering at Purdue University.

Radioactivity Well-Logging Price Reductions Announced

A substantial reduction in the price of radioactivity well-logging through casing has been made by Lane-Wells Co., E. Montrose, vice president and general sales manager, announces.

"The whole-hearted acceptance of this service by oil-well operators in nearly all areas has made it possible for us to keep our field units busy most of the time," Mr. Montrose said.

Lane-Wells, in line with its policy of providing the best possible service to the oil industry, has made price reductions on radioactivity well-logging consistent with the increased use of the service in all territories.

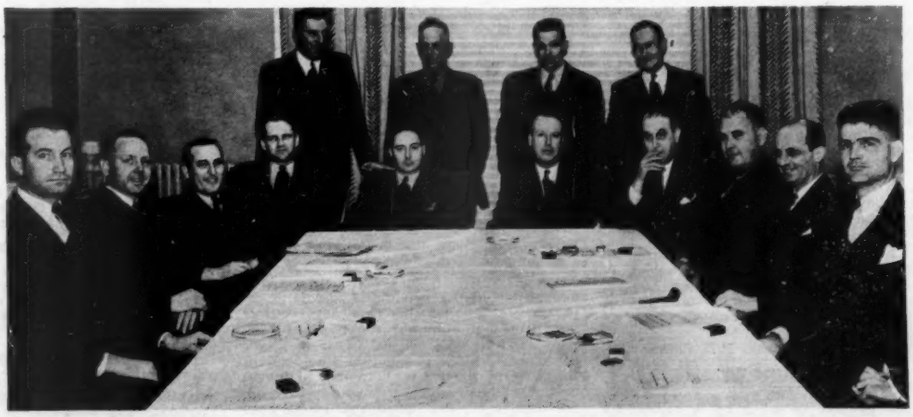
Radioactivity well-logging records formation characteristics in open hole or through as many as three strings of casing. It is principally used to locate cased-off producing zones in wells drilled before electrical logging of open hole was generally used.

BUSINESS NOTES

E. D. Bullard Co., San Francisco, Calif., manufacturer of safety equipment, announces the removal of both its Los Angeles, Calif., and Denver, Colo., officers to larger quarters. The Los Angeles offices, of which Alton A. Castle is manager, now is located at 1213 South Olive Street. The Denver office, of which Tom Hallinan is manager, is at 56 Wazee Market Street.

BUDA SALES GROUP DISCUSSES PRIORITIES SITUATION

A two-day conference devoted largely to a discussion of the priorities situation recently was held for sales representatives of the Buda Engine & Equipment Co., Dallas, Tex. Those taking part in the conference are pictured: Left to right, seated around the table, they are: J. M. Bridges, Odessa, Tex.; J. C. Baseheart, oil-field sales manager, the Buda Co., Harvey, Ill.; J. L. Joplin, sales manager, Houston, Tex.; Frank Dalling, Houston; C. E. Wright, Buda Engine Sales & Service, Tulsa; W. H. Benduhn, president, Dallas; J. M. Cullens, Buda Engine Sales & Service, Tulsa; W. L. Somner, W. L. Somner Co., Shreveport, La.; W. J. Evans, secretary-treasurer, Dallas; Kirk Rote, Houston. Standing, left to right, are: J. T. McFarland, Wichita Falls, Tex.; C. S. Hardin, Kilgore, Tex.; Archie Benson, New Iberia, La., and Tom E. Evans, Dallas.



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For Sale: Many Producing Oil Properties. Royalties, Drilling Blocks, and Oil Investments of various sizes in Mid-Continent area. Contact us to Buy or Sell properties. Alexander Bldg., Tulsa, Okla.

145 ACRES between Highway 82 and railroad in 31-19-7 MONTGOMERY COUNTY, MISS. on major company seismograph HIGH. 90 day spudding required but deed you farm if no oil here. On ideal shore line structure, eminent geologists state 4 producing sands up to 3500 ft. OIL, 1369 Court, Memphis, Tenn.

WATCH GEORGIA
For information write C. W. Deming, Registered Dealer, Waycross, Ga.

EAST TEXAS 9,000 ft. Paluxy-Trinity sand wildcat. Quick bet for 10 to 50 for one. E. CROFT, PROCTOR, TEXAS.

CENTRAL NEBRASKA
FOR SALE: Oil and Gas leases—Royalties, on proven structures by core drill—also unproven acreage. Loup Valleys Royalty Co., Loup City, Nebraska.

DRILLING Blocks, for farm out, near McLouth; 40-acre lease close in. Harry Haynes, Grantville, Kansas.

CHEAP CRANE COUNTY Sec. 18, B28, under Magnolia-Stanolind leases. Jefferson G. Smith, 215 Littlefield Bldg., Austin, Tex.

HERE is a chance to open up a good oil field: 500 acres, semi-proven, also 3000 acre drilling block, semi-proven. Write C. A. Parker, Box 451, Center, Texas.

FOR SALE: Two oil leases with 4 and 17 wells; these leases offer a real water flooding opportunity; shallow drilling. H. W. Mitchell, Osawatomie, Kans.

WILL give 2000 A. for a test well near a large gas field, if you drill at once. No rentals. One well will hold the block for a 1/16 override. John Gerhardt, New Berlin, Ill.

LARGE oil lease block on Anticline, near shallow production, in S. W. Wyoming; free for drilling shallow well. R. Barnsley, 1133 Forest, Palo Alto, Calif.

FREE, block of 3,000 acres Lease to driller or company for drilling a well in Grant Co., Ark., where 20 years ago oil was struck, only carelessness and lack of capital stopped bringing up the new oil field. For further information write to V. Herodes, 1534 S. Puiaski Rd., Chicago, Ill.

Financing

CAPITAL SEEKERS—Interested in raising $25,000 or more for a legitimate project should communicate with AMSTER LEONARD, Fox Theater Bldg., Detroit, Mich.

OUT OF 5000 American financial houses only 223 bought small issues last few years. The 223 names $4.00. JOHN F. MORRIS, Box 5411, Philadelphia.

Royalties

ANDREW J. BARRETT
The Philtower
Tulsa. Oklahoma

ROYALTY INTERESTS, under producing oil and gas-distillate properties, bought and sold. Inquiries and offerings invited. Accounts of registered dealers solicited. J. GOULD REAVES, REAVES BUILDING, TYLER, TEXAS.

WE BUY & SELL all types of Oil and Gas Royalties. Sales restricted to registered dealers only. Grimes Royalty Co., National Mutual Bldg., Tulsa, Okla.

INQUIRIES invited to buy or sell producing royalties, Illinois preferable. J. A. Wolf, 407 S. Dearborn St., Chicago, Ill.

DEEDED ROYALTIES
State Oil & Gas Leases
Harry S. Wright, Farmington, N. M.
REGISTERED ROYALTY DEALER.

ROYALTY interest under 160 acres on highly geologized structure Elk County Kansas Structure already proven productive. 5 producing horizons. Direct offset up structure from 400 bbl. well. I. E. McNicol. Box 1134, Tulsa, Okla.

Wanted

WANTED: Proven Oil production deals $100.000 or more, no brokers.
M. R. TRAVIS
1702 S. Boulder, Ph. 2-2447, Tulsa, Okla.

ANY person who has known or heard of GIB MORGAN, a driller originally from Pennsylvania, is invited to communicate with Mody C. Boatright, University of Texas, Austin.

Situations Wanted

CRACKING Plant Superintendent — 15 years' experience in operation, maintenance, design and construction of cracking plants and units for processing light petroleum fractions. Graduate Chemical Engineer from Texas A & M in 1927. Married. Age 36. With same company 15 years and now employed but desire advance. Box A-900, The Oil and Gas Journal, Tulsa, Okla.

SITUATION WANTED: Married man, well experienced in buying leases and curing titles wants position with reliable company. Address Box 372, Jasper, Tex.

GASOLINE Plant Superintendent: 15 years' experience in all phases plant operation and maintenance, best of references, available immediately. Box A-923, The Oil and Gas Journal, Tulsa, Okla.

REFINERY Engineer, 5 years' experience in operation, maintenance of thermal and catalytic cracking equipment, process control, design, and general plant engineering. Box A-922, The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM ACCOUNTANT—Full responsibility corporation, partnership, individual firms, seven years with each. All financial reports, state and federal production and tax reports, income tax returns. Above firms engaged in drilling and producing. Desires change. Wife and one child totally dependent. References. Box A-921, The Oil and Gas Journal, Tulsa, Okla.

A FORMER drilling contractor wishes position as supervisor of tools or production, "can produce," thoroughly familiar with all branches of production, experienced in deep drilling and extreme high pressures, will go anywhere. Box A-920, The Oil and Gas Journal, Tulsa, Okla.

REFINERY SUPERINTENDENT — 18 years' experience, operation, maintenance, design, construction. Age 40, resourceful, careful, energetic. Box A-880, The Oil and Gas Journal, Tulsa, Okla.

EXECUTIVE with twenty-five years' experience in the producing and land departments, part of this time as executive vice president of major Independent company which was merged with a major company, desires connection independent company or parties with money to invest in the oil business as there are many opportunities in the southwest country to make money. Box A-902, The Oil and Gas Journal, Tulsa, Okla.

Incorporation

DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G Guyer, Inc., Wilmington, Delaware.

Help Wanted

DESIGNERS AND DRAFTSMEN

For Oil Refinery work carrying high priority ratings of A-1-A and A-1-B under

Government Defense Program

Working 56 hours 3 weeks per month and 44 hours one week with time and one-half for work in excess of 40 hours per week.

Must have experience in design of:

Oil Refinery Process Piping, Concrete and Structural, Oil Heating Furnaces, Pressure Vessels, Electrical Control and Light and Power Conduit Systems.

Can use several piping squad leaders. Must be thoroughly experienced on piping design and layout.

ARTHUR G. McKEE & COMPANY
Engineers & Contractors
OIL REFINERIES
BLAST FURNACES
STEEL PLANTS
2300 CHESTER AVENUE
CLEVELAND, OHIO

DRAFTSMEN

Several openings for experienced oil refinery draftsmen capable of handling piping layouts or structural design for regular positions at Bayonne, New Jersey, refinery. Application must give education, experience, citizenship, salary, references and shall include non-returnable photos. Applications will be treated confidentially.
Industrial Relations Department,
Tide Water Associated Oil Company
17 Battery Place, New York, New York.

REFINERY ENGINEER

Excellent opportunities for several capable oil refinery engineers, with old established engineering concern. Should have technical education, with a thorough knowledge of refinery equipment and processes. Salary commensurate with experience and capabilities.

Application should be made by letter, giving age, nationality, concise outline of previous business experience and educational background, present salary, salary desired and references. Include recent photograph. Ernest Owen, E. B. BADGER & SONS COMPANY, 75 Pitts St., Boston, Mass.

Mailing Lists

ROYALTY owners, Oil investors, Unit holders, Stockholders, Operating personnel of oil industry. Oil Industry Mailing List Co., Tulsa Loan Bldg., Tulsa, Okla.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

Equipment Wanted

A NUMBER of 55,000 barrel tanks. Give complete dimensions, weights and specifications: also prices as is and if possible dismantled f.o.b. with pieces numbered and diagrammed. Also interested in other sizes. Box A-891, The Oil and Gas Journal, Tulsa, Okla.

WANTED: Light steam rotary rig. Send list and price and location. Box 164, Newton, Illinois.

Legal Blanks

BURKHART'S legal blanks and general forms serving Mid-Cont. oil field since 1908—Okla. Kans. N. Mex. Tex. Ala. Ark. Fla. Ga. Ill. Ind. Ky. La. Mich. Miss. Mo. Neb. N. Dak. Tenn. Wyo. Free catalog samples on request. Burkhart Ptg. & Sta. Co., 115 S. Cinn., Tulsa, Oklahoma.

For Sale—Equipment

⅞" SUCKER Rods suitable for bolts and reinforcing. Oklahoma City district.
MIKE TRAVIS
1702 S. Boulder Tulsa, Oklahoma.

FOR SALE: 2 pieces 18" x 6 ply x 50' used belting; 1 piece 20" x 6 ply x 50' used belting—good condition. Galoob Iron & Metal Co., Box 372, Healdton, Okla.

60,000'—12¾" OD PIPE, A-1
Weight is 34.55.
Located in Tulsa County.
SOONER PIPE & IRON CO.
Tulsa, Okla.

1—Complete Big Diesel full electric, direct current rig.
1—Medium size Direct current full electric rig.
4—Rebuilt 120 HP Diesel engines.
1—Rebuilt 200 HP Diesel Engine.
1—Small steam rig.
1—Late Model "S" Cardwell Rig complete. Made 7 holes, same as new and equipped with 6,000 feet of 3½" full hole drill pipe which has made three holes.
3—300# W.P. Boilers, A-1 Condition.
1—200 HP Diesel engine with 125 KW Generator set and switchboard.
Also stock of new engines.
K. S. RICHARDS
840 West Vickery Phone 3-5600
Fort Worth, Texas.

1—4000' Power Rig complete with Drilling Derrick and all necessary tools. Same in A-1 Condition. Write 924 Giddens-Lane Bldg. or Phone 2-0787, Shreveport, La.

FOR SALE: Wilson-Mogul Drawworks with water cooled brakes and 100 H.P. International Motor. Melton Supply Co., Seminole, Oklahoma.

FOR SALE: Two Byron Jackson 4 stage line pumps with 150 h.p. 1800 rpm GE. KTP 549 440 volt motors and starters, for 300 gpm 300# or 400 gpm 250# ready for service. A 1000 gpm 90 feet Dayton-Dowd 50 h.p. motor driven centrifugal. Two belted 2-stage air compressors of 340 and 368 cu. ft. disp., 120# w.p. Bruce-MacBeth engine driven 50 kw, 220 volt generator.
CORKEN PUMP & MACHINERY COMPANY
206 E. Grand Ave., Oklahoma City, Okla.

A L E Hedges Walsh-Weidner Scotch Marine Type Boilers, Complete. 6—150 H.P. 150# W.P. New Style API Code. 5—100 H.P. 150# W.P. New Style API Code. 1—156' x 40' x 11' Truscon All Steel Building. Bourland Supply Co., Pampa, Texas. Tel. 355.

FOR SALE: At Oklahoma City, 2 85-HP, 175 lb. Oil Field Type Boilers, just shopped, $850.00 each. H. D. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE
1—String 7" Casing @ 90c per ft.
1—String ⅞" Sucker Rods @ 13½c per ft.
2" Line Pipe @ 10c per ft.
3" Line Pipe @ 20c per ft.
1—String 2½" Upset Seamless Tubing @ 33c per ft.
And many other items of equipment useful for producers. The above quotations F.O.B. Texarkana, Arkansas and subject to prior sale. Write or phone the Union Petroleum Company at P. O. Box 826 or phone 2798-W. Office is located at 202 Presbyterian Building, Texarkana, Texas.

Two 80 H.P. Clark Compressors complete in excellent condition. $2,000.00 each. On lease at Albion, Illinois.
GEORGE B. SWINGLE
Sentinel Building Phone 549
Centralia, Illinois.

ABSORBERS
2—72" x 30' Southwestern Make 16 trays 75# W.P.
HIGH Pressure Absorber, 30" x 34' 0", 450-lb. test, Tulsa Type, 16 trays and 3 mist extractors. Will furnish complete drawings and specifications. W. S. Smith, 523 Thompson Bldg., Phone 2-5473, Tulsa.

POWER RIG COMPLETE
Capable of drilling to 6000'. Now in Kansas. Write 302 Commercial National Bank Building, Phone 3-8601, Shreveport, La.

PRESSURE VESSELS—CONDENSERS—COMPLETE CRACKING FURNACE

2—5′ 3″ OD x 45′ x 5 3/16″ THICK REACTION CHAMBER, ONE PIECE

6—3′ ID x 41′ x 4″ THICK REACTION CHAMBER, ONE PIECE

8—GRISCOMB-RUSSELL SECTIONS, TYPE C-240, X-240, E-240, 1″ OD ADMIRALTY TUBES, 20′ LONG, 18 GAUGE

86—4″ OD x 3″ ID x 21′ 6″ LONG STILL TUBES, CRACKING

126—4″ OD KEY HEADERS FOR CRACKING FURNACE

SONKEN-GALAMBA SUPPLY COMPANY

W. C. Berry or H. J. Galamba
Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

THE PLAINS OIL & REFINING CORPORATION

NOW BEING OFFERED FOR SALE, ALL OR ANY PART COMPLETE 2000 BBL. TOPPING PLANT, 47 STORAGE TANKS, PERCO TREATING PLANT, CARLOAD ETHYL PLANT, HEAT EXCHANGERS, ALL RETUBEABLE, 5 TRUCK TRANSPORTS

THE PLAINS OIL & REFINING CORP., GREAT BEND, KANS.

25 K.W. and 40 K.W. Gas Engines, 220 volts. D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West 2nd St., Cincinnati, Ohio

FOR SALE: 1 Westinghouse 5½″ x 6″ Steam Engine direct connected to 10 KW-DC Generator $200.00. H. D. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: 125 H.P. 200 W.P. Broderick Boiler, Code Condition, $975. Melton Supply Co., Seminole, Okla.

FOR SALE
OIL STORAGE TANKS

1—10,500 Bbl.
2—10,000 Bbl.
3— 5,000 Bbl.
4— 2,500 Bbl.
3— 1,000 Bbl.
1— 600 Bbl.
1— 100 Bbl.
2— 1,200 Bbl. Agitators.

Can be inspected at
Middlesex Refinery Co.
Raritan, N. J.
Address your inquiries to

DULIEN STEEL PRODUCTS, INC.
2280 Woolworth Bldg.
New York, N. Y.
Tele—Cort. 7-4676

FOR SALE: 1 Ft. Worth Spudder, 2500 ft. capacity, and 1 Star Spudder, 4,000 ft. capacity. Both machines now drilling out of Tulsa. O. B. Hausam, 4203 S. Madison, Tulsa. Phone 4-4288.

FOR SALE: Complete Standard Drilling Tools, including Young unit and heavy standard rigs, located Okemah. Box 792, Tulsa, Phone 6-9110, or Okemah, Phone 381. No junk dealers.

FOR SALE at Oklahoma City: 1—100 H.P. Kewanee 200# W.P. oil field type boiler. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Pressure Vessels handling 100 pounds working pressure 8′ diameters 31′ 8″ lengths. Rectangular tanks, capacity 25,000 gallons and 40,000 gallons each. 26 tons I beams one carload, 12-inch I beams 13′ 2″ long. 36-inch I beams in 22, 36, 38 foot lengths. I beams $61.00 ton, f.o.b. here, approx. 27 tons. Shipments made same day purchased. HARVEY BROS., 706 Rudd, Canon City, Colo.

For Sale: Two complete power drilling rigs—one a Caterpillar Diesel. The other a Wilson Giant with 450 horsepower Le Rois. Priced reasonable.

C. C. DODSON
Artesia, New Mexico

FOR SALE OR TRADE: Leidecker drill capable of drilling 3000 ft. or more, drilled less than 2500 ft., mounted on rubber, plenty of equipment. Want Star, Keystone or Bucyrus about the size of Star 71. W. O. Goodwin, Mountain Home, Ark.

FOR SALE
35 H.P. Superior Gas Engine and 16 foot Band Wheel Power. Condition A-1. The Geo. McGinley Supply Co., Bowling Green, Kentucky.

TRACTORS
Caterpillar, crawler type, size "35" $495; size "65" with nigger head winch $895; Austin Western hydraulic grader 10′ blade $650. O. C. Evans, Mt. Sterling, Kentucky

FOR SALE

20,000′ 12¾″ O.D. lapweld pipe.
5,000′ 7″, 24 lb. seamless casing.
5,000′ 2⅛″ seamless upset tubing.
300 sets 3″ tool joints, full hole.
200 sets 3″ full hole tool joints.
Both steam and power drilling rig. A complete line of drilling and pumping equipment.

Wire, write, or phone the

Louisiana Iron & Supply Company
Shreveport, Louisiana

60 day tryout on once run ⅞″ sloyed Oklahoma City second hand sucker rods to reliable operators in 10,000 foot lots. Your use of them subject to the approval of my engineer. Rods in A-1 condition. Price about half of new.

MIKE TRAVIS
1702 S. Boulder Phone 2-2447
Tulsa, Okla.

FOR SALE: 6 x 16 Wilson-Snyder Power Slush Pump. Melton Supply Co., Seminole, Okla.

FOR SALE: One, Type 40, 45 HP single Cooper-Bessemer Unit less Compressor Cylinder, near Madison, Kansas. $250.00. Cities Service Oil Co., Bartlesville, Okla., H. D. Patridge.

BOILERS
FROM
RODESSA REFINERY, SHREVEPORT, LA.

4—320 HP Babcock & Wilcox Stirling type water tube boilers, Class S No. 16 with oil burners, 304 3¼″ OD boiler tubes. Last insurance inspection Jan., 1940 approved for 150 lbs. working pressure. One complete set of new tubes for one boiler.

1—Cochrane feed water heater, Class FB, 2000 BHP.

2—Fairbanks-Morse centrifugal water pumps, 2 stage, driven by Kerr turbines, 25 HP, size 3A, 3,000 RPM.

All in Good Condition and Priced for Immediate Sale

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At (Cedar Grove) Shreveport, La.
Phone 7-7334
Leonard H. Strauss, Resident Engineer

Main Office: Kansas City, Mo.
LD. Phone 169
Harry B. Strauss, Manager

BUY AND SELL
Used Engines, Compressors, Power Plants and Gasoline Plant Equipment.
We Rebuild and Guarantee

L. F. SMITH CO.
217 W. Archer, Tulsa, Okla.

FOR SALE at Bartlesville: 15 oak drafting tables, $35 each. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE at Bartlesville: 1 model 1312 photostat machine. Complete $750. Patridge, Cities Service Oil Co., Bartlesville, Okla.

FOR SALE: Complete rotary rig suitable for 3500 ft. drilling. Muskogee Iron Works draw works, powered by 165 H.P. Hercules Motor, 7¼ x 12 Gardner-Denver Pump, powered with R-6-1 Climax engine, 3300 ft. 4½″ drill pipe, etc. Price $19,500.00. Terms. Melton Supply Co., Seminole, Okla.

15,000 to 20,000 ft. 20″ O.D., 3/16″ Wall .35 - .45 Carbon Steel Pipe P. E. in 50 ft. length good for low pressure line. Also Quantity Dresser Couplings, Ells and other Fittings.

WRITE - WIRE - OR PHONE

BROWN-STRAUSS CORPORATION
KANSAS CITY, MISSOURI

FOR SALE: 1 Motor driven rotary drilling rig; suitable for 6,000 ft. work. Melton Supply Co., Seminole, Oklahoma.

DRILLING ENGINES

Used Waukesha and International, completely rebuilt.

IMMEDIATE DELIVERY FROM TULSA STOCK.

Also complete stock of new oil field flat belting.

TRAVCO EQUIPMENT CO.
105 N. Boulder Tulsa, Okla.
Phone 3-6896

FOR SALE near Wewoka, Oklahoma: 2—80 H.P. Type V Foos Gas Engines complete in good operating condition. Patridge, Cities Service Oil, Bartlesville, Okla.

FOR SALE: Pipe & Supply Yard—All Material, Equipment, Buildings, Fence. Galoob Iron & Supply Co. Phone 2-9438, 1300 S. E. 29th St., Oklahoma City, Okla.

SPECIAL OPPORTUNITY
FOR SALE
Excellent Condition

NATURAL GAS ENGINES AND COMPRESSORS

3 — 13 x 16
3 — 19 x 16
TYPE G — 16

Easily converted for — Diesel —

FOR AIR OR GAS LIFT, GAS BOOSTING, REFINERY SERVICE, GASOLINE EXTRACTION, BELT-DRIVING ELECTRIC GENERATORS OR POWER EQUIPMENT.

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PORTLAND • NEW ORLEANS

Journalisms:

WHEN the Journal's refinery writers went to work on the Annual Refinery Number several months ago they immediately started running into many difficulties. As usual they wanted to make the issue the outstanding publication of the year covering the latest practices in refinery construction and operation. Naturally many of the new developments centered around the 100-octane aviation-fuel and the synthetic-rubber programs. But most plant operators were confused and Washington wasn't ready to explain the details of what will be the largest construction program in the history of the refining industry. But fortunately governmental agencies have made progress in recent weeks in their part of the program as evidenced by the article appearing on Page 18 this week. So you will not be disappointed when you read the Refinery Number next week. In fact, we think you will be surprised at the wealth of timely information it contains.

•

ALREADY we have heard much about blackouts, and have been instructed in how to foil night bomber attacks should they come to our land. But what about daylight raids? Is there anything that can be done to provide protection to property when attacks come in broad daylight? An answer to this question will be published in the Journal next week. The answer? Well, it's camouflage. Not the zigzag designs and patterns used in the last war, but a new art of disguising and blending that is designed to diminish the bombardier's percentage of hits and minimize the damage caused. It's done largely with colors, and breaking up straight lines and right angles with irregular arrangements of different colors. Nor does it take a highly trained artist to accomplish fairly good camouflage. Anyone can become proficient with a little study.

•

COMPLIMENTS and suggestions are coming in daily regarding our three new engineering features—Cost Engineering, the Journalog, and Engineering Fundamentals. We like the bouquets and are also appreciative of the suggestions which will lead to some minor revisions in what we propose to do in the future with these three services for those who have the responsibility of drilling wells and operating them after they are completed. One enthusiast says the additional information means that the Journal's Engineering Section will now give everything he wants. He likes the Journalog because his company drills wells. He has already picked up data of practical value from Cost Engineering which will be particularly helpful in these days when many engineering staffs have been depleted with key men going to war. Finally, he is glad of the opportunity to "bone up" with Professor Stearns' series on the fundamentals.

CALENDAR

March

OKLAHOMA UTILITIES ASSOCIATION, annual convention, Biltmore Hotel, Oklahoma City, Okla., March 23-24.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, spring meeting, Houston, Tex., March 23-25.

AMERICAN PETROLEUM INSTITUTE, Division of Production, Mid-Continent district, Mayo Hotel, Tulsa, March 26-27.

April

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, William Penn Hotel, Pittsburgh, Pa., April 9-10.

MIDWEST POWER CONFERENCE, annual meeting, Palmer House, Chicago, Ill., April 9-10.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Cincinnati, Ohio, April 15-17.

NATIONAL PETROLEUM ASSOCIATION, thirty-ninth semiannual meeting, Cleveland, Ohio, April 16-17.

AMERICAN CHEMICAL SOCIETY, 103rd meeting, Memphis, Tenn., April 20-24.

SOUTHWESTERN GAS-MEASUREMENT SHORT COURSE, Norman, Okla., April 21-23.

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-seventh annual meeting, Cosmopolitan Hotel, Denver, Colo., April 21-24.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Washington-Youree Hotel, Shreveport, La., April 22-24.

May

AMERICAN GAS ASSOCIATION, thirty-seventh annual natural-gas convention, New Orleans, La., May 4-7.

NATURAL GASOLINE ASSOCIATION OF AMERICA, Mayo Hotel, Tulsa, May 13-15.

NATIONAL ASSOCIATION OF PURCHASING AGENTS (oil-company buyers' group), Waldorf-Astoria Hotel, New York City, May 25-28.

June

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, semiannual meeting, Cleveland, Ohio, June 8-11.

AMERICAN SOCIETY OF TESTING MATERIALS, Chalfonte-Haddon Hall, Atlantic City, N. J., June 22-26.

October

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, fall meeting, Rochester, N. Y., October 12-14.

NATIONAL LUBRICATING GREASE INSTITUTE, tenth annual meeting, New Orleans, La., October 25-29.

ILLINOIS MINERAL INDUSTRIES CONFERENCE, Campus, University of Illinois, Urbana, Ill., October 30-31.

November

AMERICAN PETROLEUM INSTITUTE, twenty-third annual meeting, Stevens Hotel, Chicago, Ill., November 9-13.

NATIONAL CHEMICAL EXPOSITION AND NATIONAL INDUSTRIAL CHEMICAL CONFERENCE, annual meeting, Stevens Hotel, Chicago, Ill., November 17-22.

December

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, annual meeting, New York City, November 30-December 4.

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